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# Cultural Resources Overview

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## Central New Mexico

Joseph A. Tainter and Frances Levine



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# CULTURAL RESOURCES OVERVIEW

## CENTRAL NEW MEXICO

by

Joseph A. Tainter

and

Frances Levine

For

Cibola National Forest  
Las Cruces District Bureau of Land Management  
Albuquerque District Bureau of Land Management

1987

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Santa Fe, New Mexico



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The Salinas Province is the Bermuda Triangle of archeological reports. The results of several of the most significant projects - such as those of Hurt at Quarai, Toulouse and Dutton at Abo, Toulouse and Stephenson at Pueblo Pardo, and Hayes at Gran Quivira - have disappeared for up to several decades before emerging in published or manuscript form. The present document was essentially completed in early 1981, and in the interim seemed doomed to the same fate. The one person who was most responsible for its rescue was Thomas Carroll, Superintendent until 1987 of Salinas National Monument. Tom's enthusiasm and unfailing support overcame bureaucratic inertia, and led to the present publication. We are grateful, and wish to dedicate this volume to him.



# INTRODUCTION

## INTRODUCTORY REMARKS

Federal land managers have in recent years assumed many new tasks. One of these is the protection and management of cultural resources. While cultural resources are not an entirely new Federal concern (the Antiquities Act became law in 1906), nevertheless land managers have only recently been given the expanded conservation mandate under which we now operate. For the land manager with no training in the fields of archeology or history, this may present not only a challenge but also a new source of uncertainty. What kinds of cultural resources are to be found in an area? What do these signify? What can they tell us about the past? Such questions inevitably confront the official with new responsibilities for conserving an unfamiliar resource.

At the same time, the archeological profession has been called upon to greatly expand its fieldwork and data collection in the interest of management and protection. So much information is now being recovered about past peoples that the need for synthesis has become urgent. Many archeologists voice this concern. Rarely does the opportunity arise to act upon it.

The joint Cultural Resources Overview program of the USDA Forest Service (Southwestern Region) and the USDI Bureau of Land Management (Arizona and New Mexico State Offices) is designed to meet these needs. By providing a compilation and synthesis of the prehistory and history of different areas, the program makes available the basic background information needed by the land manager. At the same time, these studies attempt to provide the kind of synthesis needed by cultural resources specialists, both to better manage cultural resources and to further our understanding of the human use of the Southwest.

To better handle the massive amounts of information often available for such a synthesis, the Southwest has been divided into subareas, each of which will be treated separately (see Map 1). The present overview deals with central New Mexico (Map 2). The area of the study may appear oddly shaped, but in fact much of it was characterized at the time of Spanish contact by a degree of ethnolinguistic unity. The region was occupied almost entirely by speakers of the Piro, and related Tompiro, languages.

This overview has been prepared for the Cibola National Forest, and for the Las Cruces and Albuquerque Districts of the Bureau of Land Management.

## BACKGROUND INFORMATION

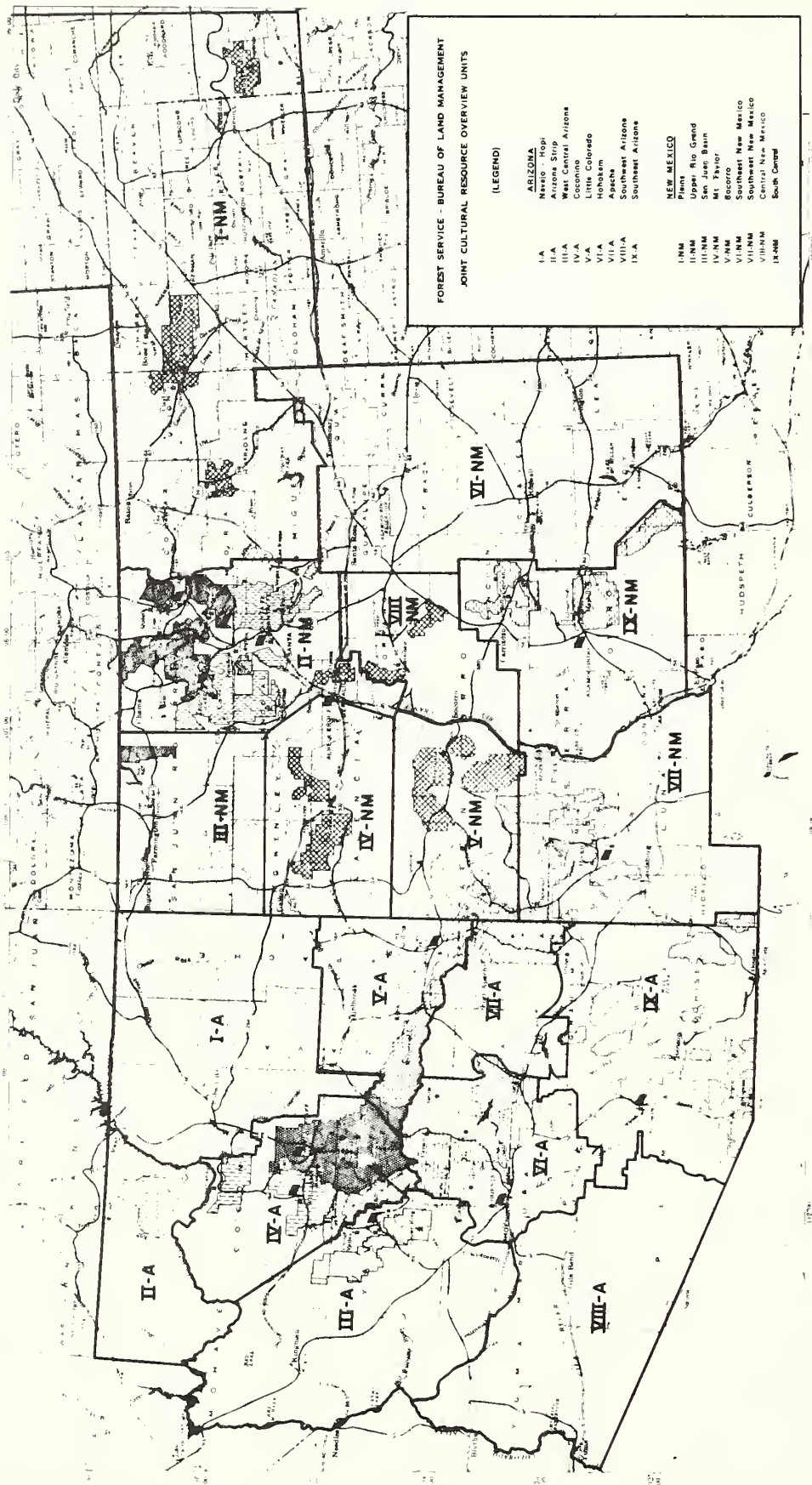
The preparation of this study involved a convenient division of the authors' labor. One of us (Levine) is a specialist in historic archeology, while the other (Tainter) is basically a prehistorian. The tasks of research and writing were divided accordingly. Part of the historic section, as well as bibliographic annotations, were prepared by John P. Wilson.

The task of synthesizing the information from even a region as poorly known as central New Mexico can be monumental. This could easily lead to a volume of excessive length. Any writer of such a study, whether explicit about this dilemma or not, must be selective in the information presented. This being so, it is the responsibility of an overview writer to make clear the emphasis that will be followed. Although the basic chronologies of the prehistoric periods are presented in as much detail as possible, we have both concentrated, wherever possible, on subsistence and economic practices, social organization, and patterns of land use.

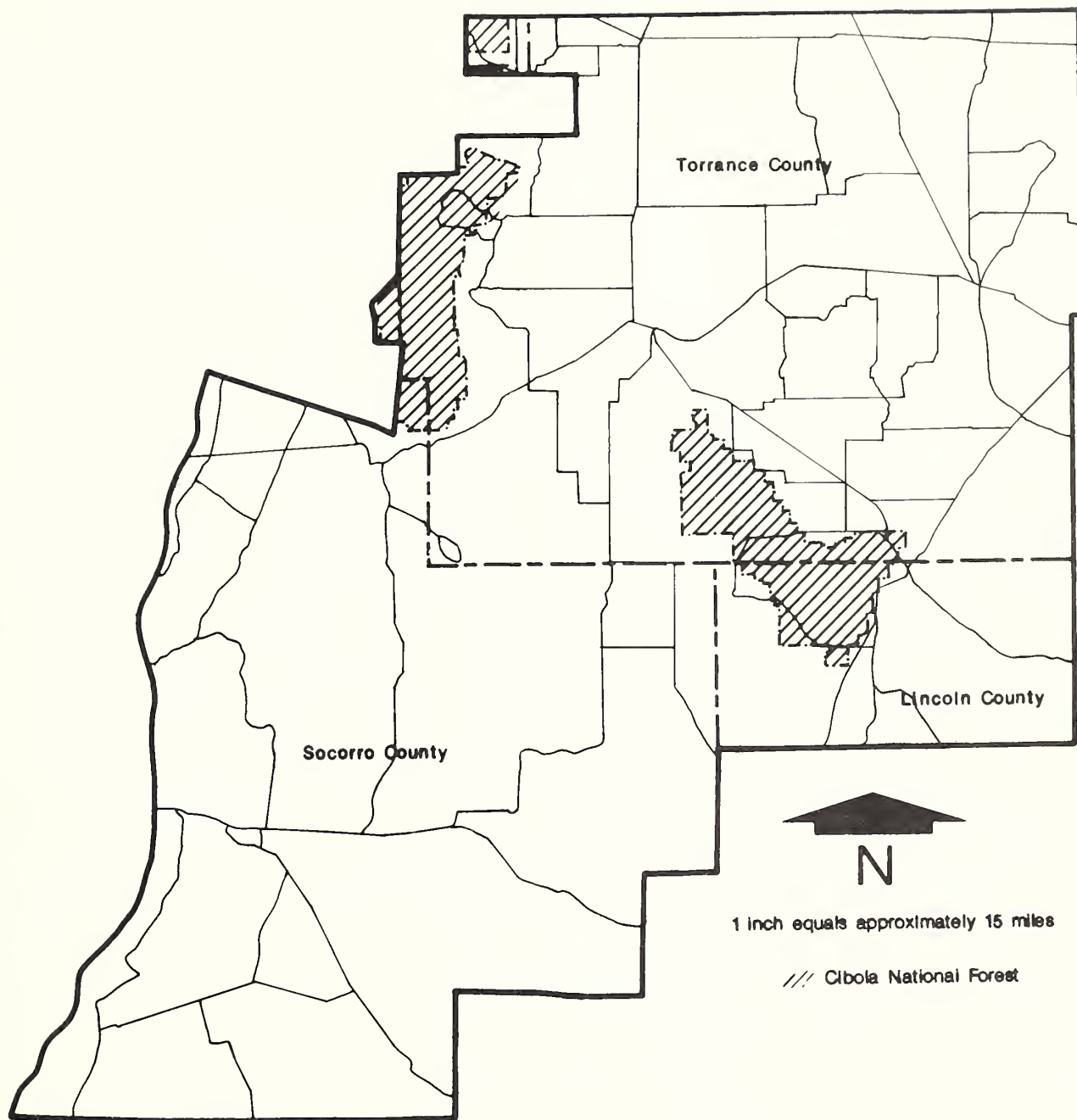
Background research for this overview began in August, 1980. Writing of the prehistory section began in November, 1980, and was essentially finished by February 1, 1981. Minor additions were made thereafter, ending in mid 1986. The history portion was completed in December, 1981. We have attempted to make the bibliography as complete as possible, as of these dates.

## THE OVERVIEW AREA

Central New Mexico is a varied landscape, exhibiting plains, playa, canyon, riverine, mesa, foothill and mountain habitats (Map 3). Elevation ranges from 10,098 feet at Manzano Peak to about 4,500 feet in the southern, riverine portion of Socorro County. The only significant drainage in the area is the Rio Grande. The Rio Puerco and Rio Salado enter the main river just outside the northwest corner of the overview territory.



Map 1. Forest Service-Bureau of Land Management joint cultural resources overview units.

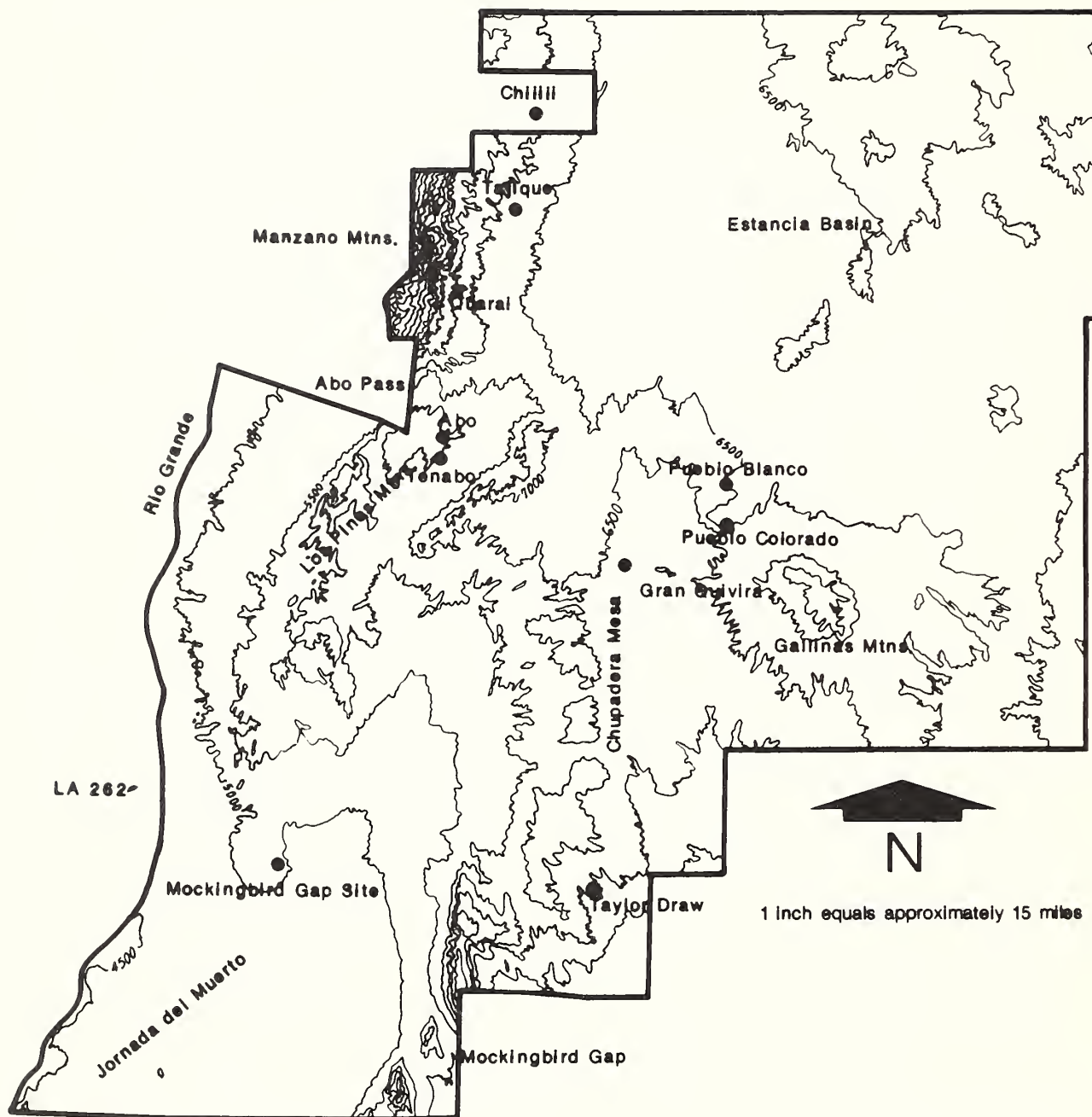


Map 2. Central New Mexico Overview Area. Showing Counties, Roads, and National Forest Lands.

Annual rainfall in the area averages 8.3 inches at San Marcial, 10.3 at Socorro, 13.2 at Estancia, 15.9 at Mountainair, 15.3 at Progresso, and 12.9 at Torrance. Spring (March - May) rainfall has averaged 1.58 inches at Socorro, 4.33 at Tajique, and 3.34 at Corona. Summer (June - August) moisture averages 3.46 inches at Socorro, 6.92 at Tajique, and 6.43 at Corona (Tuan et al. 1973:18, 31, 32).

The growing season in the upland portions of the area ranges between 120 days at the northern end of the Estancia Basin, and 180 days just south of the Gallinas Mountains and in the Jornada del Muerto. In the riverine area it ranges between 190 and 210 days (Cordell 1979: Map 3).

#### Geological Structure



Map 3. Topography, major topographic features, and selected cultural resources of the Central New Mexico overview area.

Kelley (1952:102) notes that the dominant structures of the Rio Grande Basin are of the basin and range type. They are, however, so far removed from the basin and range structures of the Great Basin, and are so different from Arizona basin and range structures, that Kelley feels it better to consider the Rio Grande structural belt a separate and distinct type

within the Rocky Mountain structural belt. He terms this the Rio Grande Rift Belt of the Rocky Mountains.

Kelley's view of the major tectonic features of the Rio Grande depression, including the overview area, is shown in Map 4. The Rio Grande depression is a series of basins arranged in



sequence north-northeasterly along the course of the river. The Albuquerque basin is the largest of this series. The mountains to the east of it form one great uplift some 80 miles in length. From north to south this includes the Sandia, Manzanita, Manzano, and Los Pinos ranges. This uplift is an eastward tilted fault block, divided or broken into several mountainous divisions by cross faults or other structural deviations. The Los Pinos uplift terminates gradually to the south in lava dips which descend into the north end of the Jornada del Muerto depression.

The Joyita Hills are a north trending uplift at the southern end of the Albuquerque Basin, along the eastern margin of the Socorro Constriction. This structure is a low fold or anticlinal bend which intervenes between the Jornada del Muerto and Rio Grande depressions. This low fold is intricately broken by a network of small, high-angle faults. The thrust faults of the Los Pinos Mountains die out or pass into younger normal faults in the north end of the Joyita Hills.

Sediments exposed within the Albuquerque Basin are predominantly sands, silts, gravels, and clays of the Santa Fe formation. Toward the end of Santa Fe times a widespread erosion surface appears to have developed across the Albuquerque Basin and into adjoining uplifts.

The Socorro Constriction, south of the Albuquerque Basin, shows a pronounced narrowing of the Rio Grande Depression, as well as a marked change in the structural alignment of the bordering uplifts. To the west of the Socorro Constriction are curious reversals of tilt in the Socorro and Magdalena uplifts. This is apparently a regional phenomenon, for the same occurs at the Mockingbird Gap fault-wedge between the Oscura and San Andres uplifts on the east side of the Jornada del Muerto depression. Extensive late Tertiary to Quaternary erosion surfaces are developed on both sides of the Rio Grande in the area of the Socorro Constriction.

In the San Marcial basin, the Rio Grande depression again widens into an irregular basin. The main axis trends south-southwest, and coincides with the Rio Grande. The basin is bounded on the east by a low edge of the Jornada del Muerto, termed the San Pascual Platform.

There is an extensive, though much dissected, erosion surface which exists on both sides of the

Rio Grande in the San Marcial basin. This is largely cut upon slightly deformed Santa Fe beds.

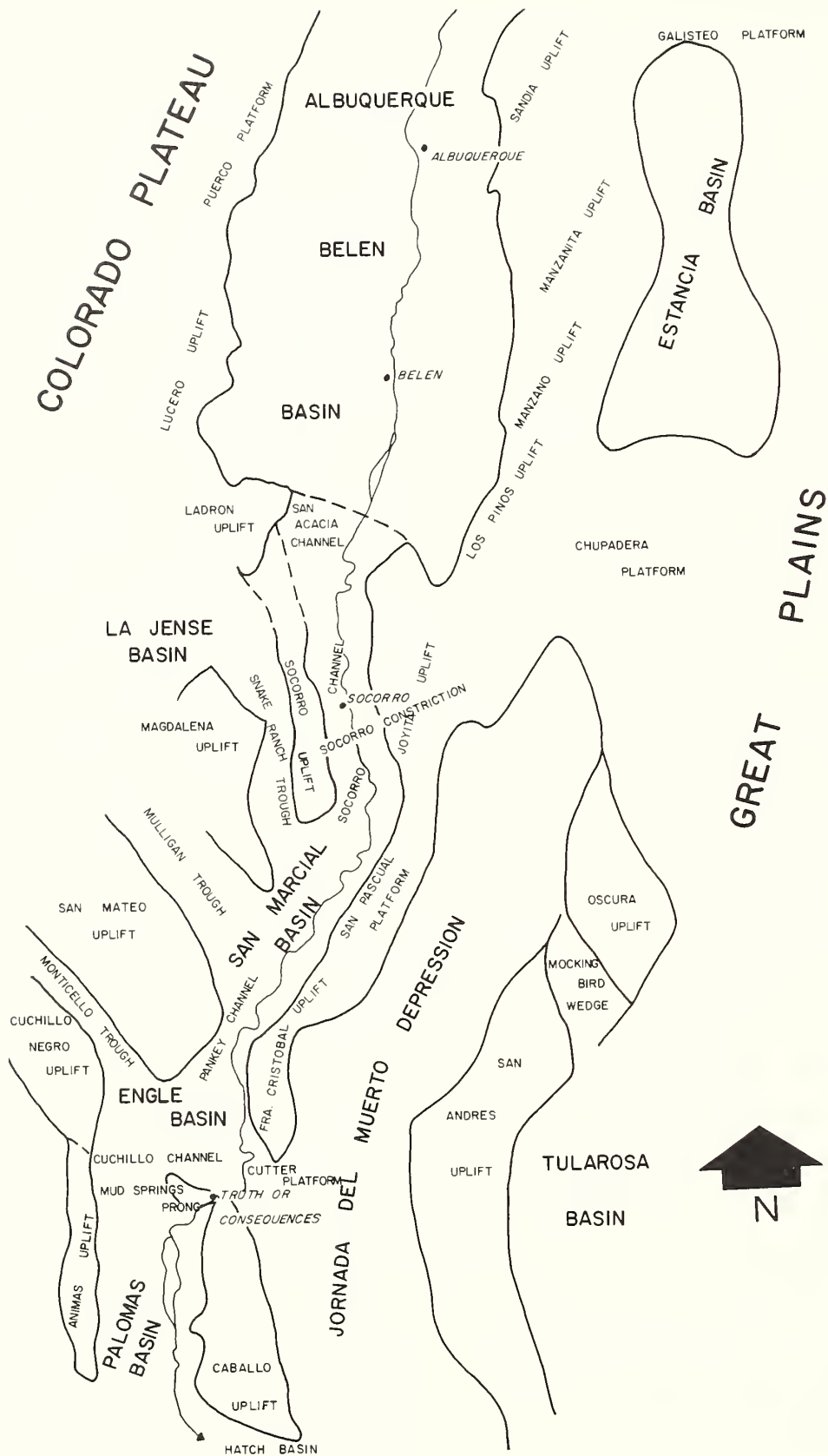
The Jornada del Muerto depression is a great downwarp to the east of the Rio Grande. It lies between the uplifts and platforms along the east edge of the Rio Grande depression, and the San Andres Uplift. At its northern end it is bounded on the east and west by the Oscura Uplift and the San Pascual Platform, and appears in this area to be a faulted synclinal depression. The Jornada del Muerto lacks the thickness of the Santa Fe beds characteristic of the Rio Grande depression. Kelley, thus, considers it unlikely that the Rio Grande ever flowed through the Jornada del Muerto (Kelley 1952:93-101).

Chupadera Mesa, in the center of the overview area (Map 3), is a wide tableland of moderate to low relief. Elevation ranges from 7,050 to 7,250 feet. To the north and west is lower, rough terrain, underlain by southeast-dipping strata of rocks that have variable resistance to erosion. Thus, the surface in this area consists of alternating valleys and ridges. On the southwest, Chupadera Mesa borders the Jornada del Muerto, while to the east are gently rolling hills and wide valleys that merge into the Gallinas Mountains (Bates et al. 1947:9-10).

To the north of Jumanes Mesa lies the Estancia Basin. It is bordered on the west by the Manzanos, on the northwest by South Mountain and the San Pedro Mountains, on the northeast by topographically dissected mesa country, and on the east by the Pedernal Hills. From the Manzano foothills on the west, a gently sloping plain extends to the flat center of the basin. This plain is occasionally broken by rock hills and incised drainages. The central, flat portion of the valley clearly exhibits its lake bed history. Beach ridges and other shoreline features are observed at the past lake margins. In the south-central portion of the basin are clay hills and salt basins, the latter a resource of considerable value to both natives and settlers (Meinzer 1911: 9-11).

#### Vegetation Zones

Of the six transcontinental life zones present in New Mexico, four occur in the overview area. The lowest of these is the Lower Sonoran, which occurs in the study area in the Rio Grande trough north to about Los Lunas. On the sides of the valley this zone tops out at about 5,000 feet,



Map 4. Major tectonic features of the Rio Grande depression (after Kelley 1952:92).

but on northeast slopes it will terminate about 500 feet lower, and on southwest slopes about 500 feet higher. It is characterized by such species as mesquite, screwbean, acacia, creosote bush, ocotillo, allthorn, small-leaved sumac, tree yucca and various cacti (Bailey 1913:14). Many of these were of economic importance to the native occupants.

The Upper Sonoran zone generally extends from about 5,000 to 7,000 feet. The climate of this zone is mild, without great extremes of heat or cold. The zone is mainly arid, with enough moisture to support grass, but without enough for reliable agriculture except in topographic situations that collect runoff. There is a dominant grassland character to this zone. Trees include pinyon and juniper in the upper reaches of the zone, with juniper often extending into lower elevations. Ponderosa pine occasionally edges downward, while along streams cottonwood is characteristic. Sagebrush is often present throughout the pinyon-juniper belt (Bailey 1913:25, 35; Elmore 1976:13). The Upper Sonoran zone occupies the eastern part of Socorro County and much of Torrance County.

The Transition zone lies between 7,000 and 8,500 feet on northeast slopes, and between 8,000 and 9,500 feet on drier southwest slopes. It covers most of the Manzano and some portions of the Gallinas and Oscura Mountains. Compared with the zones above and below, it is intermediate in temperature, moisture, and soil conditions. The soils are relatively dry and sandy, containing little or no humus. Ponderosa pine and Gambel's oak dominate the zone. On cool, north slopes, Douglas fir will intermingle with occasional aspens. On lower, drier slopes, pinyon will be found. Hence, the term Transition zone is appropriate (Bailey 1913:42; Elmore 1976:109).

The Canadian zone is found in the study area in only a limited portion of the Manzanos. On cold slopes it will extend down to 8,500 feet elevation and to 9,500 feet on warm slopes. It is a densely forested zone, characterized by spruce, fir, and aspen (Bailey 1913:46; Elmore 1976:157, 175).

Manthey (1977) has produced a detailed study of the flora of the Sevilleta Wildlife Refuge. The eastern segment of the refuge (the segment within our study area) exhibits a gently sloping bajada from the Los Pinos escarpment west to the Rio Grande. This feature becomes increasingly dissected near the river. It has been modified

by ancient river terraces and by wind and water erosion to produce a complex terrain of hills, gravelly ridges, sandy washes, and rolling, sandy hummocks (Manthey 1977:4).

Manthey discerned 12 floristic communities in the Sevilleta Wildlife Refuge. The diversity represented by these floristic communities would have been a resource of considerable value to the native population. These are listed in Table 1.

#### Fauna

A variety of faunal resources occur within the overview area. Deer tend to concentrate in sagebrush, pinyon-juniper, Ponderosa, and fir vegetation, while elk have been recorded in the higher elevations of the Manzano and Gallinas Mountains. Antelope occur in conditions of open grassland, while bison were once available to the occupants of the Estancia Basin. A large variety of rodents are most abundant in the lower ranges. Birds are particularly diverse, with the greatest variety found in wooded habitats. The Rio Grande trough supports a diverse assemblage of migratory waterfowl during the winter months (Whitford 1978).

#### ARCHEOLOGICAL INVESTIGATIONS IN THE STUDY AREA

In synthesizing the history of American archeology, Willey and Sabloff (1974) classified archeological research in this hemisphere into five periods: (1) the Speculative Period (1492 - 1840), (2) the Classificatory-Descriptive Period (1840 - 1914), (3) the Classificatory-Historical Period: the Concern with Chronology (1914 - 1940), (4) the Classificatory-Historical Period: the Concern with Context and Function (1940 - 1960), and (5) the Explanatory Period (post - 1960). These periods are, of course, highly generalized, pertaining as they do to the whole of American archeology. In any locality, such as central New Mexico, individual studies may not fit precisely into this framework.

#### Speculative Period

Spanish records of the reconquest describe the burned and ruined Piro pueblos of the riverine area, and since these lay astride the major route to the south, they were probably observed for many years after their abandonment. In the Salinas Province, however, Spanish penetration following abandonment was limited, owing to fear of the Apache.

Table 1

## Floristic Communities of The Sevilleta Wildlife Refuge\*

| Community                       | Description                                                                                                                                 | Elevation |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 1. Rio Grande Floodplain        | Narrow strip of land parallel to the river.                                                                                                 | 4400-4500 |
| 2. Rio Salado Sand Dune         | Fan-shaped area of active and stabilized dunes along the Rio Salado.                                                                        | 4500-5000 |
| 3. Desert Grassland             | Largest and most floristically diverse.                                                                                                     | 4700-6000 |
| 4. Grassland Riparian           | Isolated elements along small streams, springs, and tanks.                                                                                  | 5250-6000 |
| 5. Montane Riparian             | Isolated areas centered around permanent springs and intermittent wet-weather seeps.                                                        | 5600-7400 |
| 6. Grassland Wash and Arroyo    | Interspersed within the Desert Grassland                                                                                                    | 4700-6000 |
| 7. Desert Shrubland             | A narrow band west of the Rio Grande.                                                                                                       | 4800-6000 |
| 8. Interior Chaparral           | Occurring on drier slopes of the Ladrón Mountains and a few spots on the west slopes of the Los Pinos Mountains.                            | 5600-8000 |
| 9. Montane Canyon               | Occurs in narrow canyons with sandy or rocky bottoms and steep, rocky walls.                                                                | 5700-7300 |
| 10. Evergreen Woodland          | Occupying a large part of the Los Pinos and Ladrón Mountains.                                                                               | 5600-8600 |
| 11. Forest                      | Restricted to only a few spots in the Ladrón Mountains. Ponderosa and Gambel's oak are included in this relict from once extensive forests. | 7000-8200 |
| 12. Rock-Shield and Talus-Slope | Occurring in numerous locations in the upper Ladrons and in a few parts of the Los Pinos Mountains.                                         | 6200-9176 |

\* After Mantney (1977).



Schroeder (1962) notes a few maps of the late 1600s and 1700s which show pueblos in the Gran Quivira region. He also notes an inscription with a date of 1753 on a wall of San Buenaventura Mission, and suggests that it may have been made by troops stationed at Quarai and Tajique to guard against Apache attacks. These early Spanish records, however, cannot really be considered archeological in the same sense that contemporary English colonists to the east were speculating about archeological remains that they could not relate to living Indian groups.

A later inscription at Gran Quivira, dated 1773, may be connected with a journey possibly made to the region by a Virginian, John R. Peyton. In 1773-74 he apparently came up the Rio Grande Valley and turned east in the vicinity of the Salinas Province. He noted that he had been told that the ruins were Indian in origin, but he thought they were Spanish. Possibly he was referring to San Buenaventura (Schroeder 1962).

In the winter of 1835-36, Benjamin D. Wilson left the Rio Grande south of Socorro and traveled east, arriving at Gran Quivira without food and water. Finding what he thought was a concrete aqueduct, he reported tracing it easterly to the Gallinas Mountains where he found water (Woodward 1934).

#### Classificatory-Descriptive Period

The Classificatory-Descriptive period witnessed the initial development of field archeology as we know it today. In this period persons with an avocational interest in America's earliest populations produced descriptions and rudimentary classifications of at least the more outstanding kinds of archeological remains, such as mounds and pueblo ruins.

The observation and study of archeological remains in the overview area evolved noticeably throughout this period. In 1844, Josiah Gregg recorded what he felt were stone cisterns and remains of stone aqueducts eight or ten miles in length at Gran Quivira. He echoed the belief that this was actually a wealthy Spanish mining town. This is similar to Peyton's belief, noted above, and may reflect a widespread notion of the day. Possibly this belief is related to the persistent tales of Spanish treasure buried at the site.

In 1848 a survey was conducted through the area

by Lieutenant J. W. Abert. He examined the pueblo ruins near Tajique, and at Quarai and Abo. Abert also described the ruins of Gran Quivira, but apparently didn't visit the site. A few years later Carleton (1855) commanded a military reconnaissance through the region, initiated because of the Apache menace. He described the ruins of Abo, Quarai, and Gran Quivira, relating the story of buried treasure. During his trip Carleton visited an apple orchard on the east side of the Manzanos supposedly planted by Spanish priests before the abandonment of the province. Based upon the size of the trees, he estimated that the ruins must have been greater than 200 years old - a remarkably accurate appraisal, especially considering that he relied on no documents pertaining to the abandonment. Some years later, in 1872, Deputy Surveyor Willison described Gran Quivira while surveying the New Mexico base line (Bandelier 1881:30). This was followed in 1878 by a map of the ruins by Lieutenant Morrison (Bandelier 1890:282).

The major, early work in the overview area, and the first work of a truly scholarly nature, was conducted by Bandelier (1890, 1892). Bandelier carried on both historical research and archeological fieldwork in what are now Socorro and Torrance counties, tracing the distribution of the Tiwa and Piro languages, and describing the ruins of the area. He found a few traces of the chapel at Chilili. (N. C. Nelson traced the foundations of this church a few years later [Walter 1916:19].) Bandelier stated his belief that the church and convento at Gran Quivira had not been finished, and concluded that the linear features at the site were designed to carry water (1890:286). In 1898 John Virgin described a paved limestone floor in San Buenaventura.

#### Classificatory-Historical Period

Other than Nelson's test at Chilili, no further work was done in the Salinas area until the School of American Archaeology (now the School of American Research) and the Museum of New Mexico started excavation and stabilization projects at Quarai, Gran Quivira, and Abo. The first season, 1913, was spent at Quarai (Hewett 1917). With this, the Classificatory-Historical Period (Chronology) commenced in the overview area. Since these projects concentrated on late prehistoric/early historic period remains there was, in fact, little contribution to local chronology.

There was a substantial contribution toward rescuing the Spanish missions from further deterioration, and making them secure for public enjoyment. This work focused on Gran Quivira between 1923 and 1925 (Hewett 1923, 1924a, 1924b, 1925, 1926, 1927; Pinckley 1924; Halseth 1926; Bloom 1927), shifting in the 1930s to Abo (Toulouse 1949). Through the 1930s and 40s the focus was on Quarai (Senter 1934; Ely 1935; Baker n.d.; Hurt 1985; Hurt and Dick 1946). Ms. Carmie Lynn Toulouse of Albuquerque has in her possession diaries of her uncle's work in the area during this period (Toulouse 1980). It was during these years that Harrington (1928) discovered and described Sandal Cave in southern Socorro County, and that Frank Hibben (1941) excavated Manzano Cave.

During the latter years of this period, Yeo (n.d., 1948) and Mera (1931, 1935, 1940a, 1940b, 1943) conducted large regional surveys which included portions of the overview area. Mera's work, in particular, established basic knowledge of the relative placement of the ceramic complexes of the area.

In 1940, Joseph Toulouse was appointed custodian of Gran Quivira. He conducted stabilization work at the monument (Toulouse 1940, 1942a, 1942b), and initiated a study of the supposed water systems of the ruins (Toulouse 1945). In the spring of 1941, with the assistance of Robert Stephenson, he directed Washington and Jefferson College excavations at nearby Pueblo Pardo. World War II prevented any more fieldwork at the site, and the report prepared following the 1941 season was not published for several years. When it did appear (Toulouse and Stephenson 1960), it proposed a chronological sequence for late prehistoric manifestations in the area.

On a national level, the succeeding portion of the Classificatory-Historical Period (1940-1960) was characterized by growing concern with context and function, the behavioral significance of artifacts, patterns of settlement and community organization, and cultural ecology (Willey and Sabloff 1974:131-132). Some of the research in the overview area mirrored this pattern, as in the continuing debate over the water system at Gran Quivira (Toulouse 1945; Howard 1959a), and in the function of the adobe lined pits at the site (Howard n.d., 1981; Hayes 1981).

In 1951 Gordon Vivian excavated portions of House A, Kiva D, and San Isidro Mission at Gran Quivira. His report, published some years later (Vivian 1964), contained important observations and interpretations. The New Mexico Highway Salvage Program was in full swing in the 1950s, and several sites were excavated in the overview area (Fenenga 1956; Fenenga and Cummings 1956a, 1956b; Wendorf 1956; Alexander 1962, 1964). Green (1955) conducted excavations at the same pithouse site as Fenenga (1956). Shiner and Lark (1954) conducted survey and excavation in the riverine area, in anticipation of pipeline construction.

Independent research projects were also undertaken in this era, although these were fewer than Federal and salvage-inspired undertakings. In 1944, Bertha Dutton tested the non-Mission portion of Abo (Dutton 1981). John Campbell (1951) conducted a survey in the Estancia Basin for Florence Ellis, while Vance Haynes (1955) reported early manifestations in the same area. Frank Hibben, with assistance from Florence Ellis, excavated the Lucy site. This excavation has been reported by Roosa (1956a, 1956c, 1968). Stanley Stubbs (1959) excavated and reported on early Spanish churches at Tabira (Pueblo Blanco) and Quarai. In the riverine area, Weinrod (n.d.) began the initial exploration of Lemitar Shelter, north of Socorro, in 1953. This site had been discovered the previous year by Vance Haynes and G. Shelton.

#### Explanatory Period

The Explanatory Period (post-1960) has been characterized on a national level by the goal of using the archeological record as a data base for testing explanations of cultural behavior. The goal, thus, is no longer history per se, but rather the use of historical occurrences to understand processes that are not bound by time or space. Thus far, this emphasis has had little expression in the overview area. Instead, with the sparseness of our knowledge of the region, research continues to tackle the basic problems of description, chronology, and classification, although some inquiry into processual matters is also evident (e.g., Lyons 1969; Warren 1981).

The early years of this period saw a number of small Park Service projects at Gran Quivira (Voll and Richert 1962a, 1962b; Gordon 1962; Ice 1968; Sudderth and Kruse 1968). But the major work of the period, and indeed the major project

conducted in the study area, was Alden Hayes' (1981) excavation of Mound 7. After a delay of many years, this long-awaited report, with accompanying studies, was finally published in late 1981. (Included in this was a report by Caperton on archeological survey in the Gran Quivira area.) Subsequent excavations at Gran Quivira were conducted by Bruce Anderson in anticipation of construction for a new visitor center. Elsewhere in Torrance County during these years, Thomas Lyons conducted a survey for PaleoIndian and Archaic remains around Lake Estancia. The results were reported in his doctoral dissertation (1969).

In the northern Jornada del Muerto a major PaleoIndian site, Mockingbird Gap, was recorded by Hammack (1964) during a contracted survey. Excavations have been conducted at this site by Robert Weber and George Agogino (1966, 1967, 1968, 1970; Weber 1973b; Agogino and Weber 1970). These excavations had not been completed when the research for this overview was undertaken. Weber, who has been most active in the area, also excavated the Tajo 2 pithouse (1973a), Hackberry Shelter (Anzalone 1973), and prepared a synthesis of the prehistory of Socorro County (Weber 1963). In the early 1970s, Ronald Anzalone investigated late Archaic/early Basketmaker sites in San Lorenzo Canyon, north of Socorro, continuing Weinrod's excavations at Lemitar Shelter. The results formed his M.A. thesis (Anzalone 1973).

With the expansion in recent years of Federal support for the conservation of archeological and historical resources, most of New Mexico has seen an explosion of contracted archeological work. The overview area, however, has witnessed comparatively little of this, due primarily to the small amount of mineral development.

The Cibola National Forest, the Bureau of Land Management, the U.S. Fish and Wildlife Service, and the National Park Service all hold land in the area and maintain active programs of cultural resource management. The Cibola National Forest has conducted a sample archeological survey in the Gallinas Mountains under the supervision of Emily Garber, and a complete survey in the northeastern Manzanos (Garber 1982). The Socorro District of the Bureau of Land Management, as

part of its Rio Grande Occupancy Resolution Program (RGORP), has conducted cultural resources evaluations of lands scheduled for disposition to private parties. These surveys have been directed by Mark Henderson and Pat Baratti-Sallani. The Bureau of Indian Affairs has recently reported the results of a sample survey of lands scheduled for timber harvesting in the Manzano portion of the Isleta Reservation (Ireland, Walt and Stein 1981).

Among contracted studies, the most notable are the Human Systems Research surveys of the lower Puerco and Salado rivers (which, although just outside the overview area, are pertinent) (Wimberly and Eidenbach 1980), the Office of Contract Archeology excavations at Sevilleta Shelter and in Los Alamos Canyon (Winter 1980; Hogan and Winter 1981), and the New Mexico State University Surveys in Socorro County (unreported) and at Gran Quivira (Beckett 1981b).

A major survey of historic architecture in Torrance County was undertaken by Edith Cherry for the New Mexico Historic Preservation Program. It focused on pre-1945 structures.

In 1981, several projects were underway that promise to provide substantial information about the region over the next few years. Michael Marshall began a survey of the Rio Grande and adjacent terraces, funded in part by the New Mexico Historic Preservation Bureau (Marshall, Gossett, et al. 1981; Marshall 1982; Marshall and Walt 1984). Linda Cordell directed the University of New Mexico archeological field school (cooperatively with the Bureau of Land Management) at the Piro site of LA 282, which is sometimes thought to be the Pueblo of Teypama (Earls 1981). Stuart Baldwin of the University of Calgary conducted excavations and survey in the Abo Pass area, most especially at the important site of Tenabo (Baldwin 1981).

Major inventory records for the area are held by the Laboratory of Anthropology, the New Mexico Historic Preservation Bureau, and the Socorro District of the Bureau of Land Management. The Cibola National Forest maintains records of cultural resources on lands under its jurisdiction.



# THE EARLY NATIVE OCCUPATION

## PALEOINDIAN

The overview area is a prime locality for study of the PaleoIndian period. Archeological remains dating to the era are abundant and diversified, and have been found in several sections of central New Mexico. This may be due, in part, to the eroded nature of much of this region. Cordell has pointed out that, in New Mexico, PaleoIndian sites have been found consistently in areas of moderate to severe erosion where older land forms have been exposed (1979:133-134). Cordell's map of eroded terrain (1979:134) shows that the Estancia Basin area and the northern Jornada del Muerto are both eroded localities. Not surprisingly, the most abundant PaleoIndian remains in the overview area have been found in precisely these places.

It is pertinent to the aims of this study to enter into a brief discussion of the general PaleoIndian phenomenon in western North America. A total synthesis of the PaleoIndian period in the Southwest will not be attempted, however, since two excellent reviews of this topic have recently been written (Irwin-Williams n.d.; Judge n.d.).

In recent interpretations of the PaleoIndian period, Cynthia Irwin-Williams (1977; Irwin-Williams and Haynes 1970) has proposed that there were close correspondences between climatic fluctuations and PaleoIndian occupation in western North America. Irwin-Williams concludes (1977, n.d.; Irwin-Williams and Haynes 1970) from paleoecological research that post-Pleistocene moisture levels in the area fluctuated as shown in Table 2.

### Pre-Clovis

The overview area and adjacent localities figure prominently in the debate over pre-Clovis occupation in North America. Most of the sites for which pre-Clovis dating has been claimed have been the subject of academic disputes. Sandia Cave (Hibben 1937, 1941), located on the Cibola National Forest a few miles northwest of the study area, has been the subject of particularly virulent controversy. This controversy will be discussed in a subsequent section of the present chapter.

Judge (n.d.) has recently reviewed the evidence

for pre-Clovis sites in the New World and has concluded that the sites which might be scientifically acceptable tend to be concentrated (although not located exclusively) in the western, high altitude areas of both North and South America. This pattern suggests to Judge an adaptation which tended away from grassland areas of low ecological diversity. In contrast, archeological remains from subsequent time periods tend to concentrate in low diversity habitats, leading many scholars to conclude that these populations practiced a focal economy concentrated on large game animals (Judge n.d.:57).

### Clovis

The Clovis occupation of the Southwest corresponds with what Irwin-Williams (1977, n.d.; Irwin-Williams and Haynes 1970) believes was a period of increased effective moisture between 9500 and 9000 B.C. Irwin-Williams and Hayes (1970:61) suggest that during this period of increased moisture the western United States witnessed a dramatic increase in human population size, with consequent expansion into new regions. They propose that in the Southwest, during this interval, the faunal assemblage was basically an extension of that of the Plains.

It has generally been thought that Clovis exploitation of fauna was concentrated on extinct mammoth, although Judge's (n.d.:27-29) recent re-evaluation of Clovis artifact complexes suggests that Clovis populations may have scavenged mammoths, rather than systematically hunted them. Bison, horse, and smaller fauna have been recovered at Clovis sites in addition to mammoth. Irwin-Williams (n.d.:10) believes that these were not of major importance in the diet. Judge, however, suggests that the Clovis diet was in fact eclectic, being transitional between earlier, diffuse economies, and later, focal strategies (n.d.).

Clovis sites are more widely dispersed than those of subsequent time periods, and are less restricted in their distribution to specific microenvironmental situations. In general, though, sites are found near sources of water and/or in areas where game animals could be trapped or driven.

The Clovis lithic technology is distinctive. In

Table 2

## Fluctuations In Post-Pleistocene Moisture

| Date             | Moisture                                                                                                                                                                                       |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pre-10,000 B.C.  | Greater effective moisture than at present in the Southwest.                                                                                                                                   |
| 10,000-9500 B.C. | A period of decreased effective moisture.                                                                                                                                                      |
| 9500-9000 B.C.   | Return to increased moisture.                                                                                                                                                                  |
| 8600-5000 B.C.   | A period of generally decreased moisture, with a minor reversion to increased moisture between 6700 and 6000 B.C., followed by a moisture decrease bringing conditions similar to the present. |
| 5000-3000 B.C.   | The Altithermal, a period of noticeably decreased moisture.                                                                                                                                    |
| 3000-2500 B.C.   | The Medithermal, a time of greater moisture than the present.                                                                                                                                  |

addition to the diagnostic fluted points (see Fig. 1), common artifacts include side scrapers, raclettes, bifacial knives, perforators, utilized flakes and hammerstones. The raw material for implements was often carried as much as 200 miles to the place of final tool deposition. This suggests extensive trade networks and/or an economic cycle involving a broad territorial base (Irwin-Williams n.d.).

Clovis points have been found at and near the Lucy site (Roosa 1968:79), and at other localities in the Estancia Basin (Haynes 1955; Roosa 1968; Lyons 1969), but Lyons reports that they are rare in this area (1969:86). A small site with a Clovis point base was found in the summer of 1980 in the northeastern Manzano Mountains (Garber 1982). The Mockingbird Gap site in the northern Jornada del Muerto contains an extensive Clovis occupation (Hammack 1964). One other site with Clovis materials is located west of the town of Socorro (R. Weber, personal communication).

#### Folsom

The Folsom period is dated to between 8800 and 8300 B.C., during what Irwin-Williams (n.d.) believes was a period of decreased moisture relative to Clovis. Perhaps as a consequence, Folsom settlements are more concentrated on major water sources. Mammoth and other elements of the Clovis faunal assemblage had declined or become extinct; Folsom hunters concentrated instead on Bison antiquus, a now extinct species. Indeed,

Irwin-Williams and Haynes (1970:63) have suggested that, from Folsom times onward, PaleoIndian adaptation relied on bison. Bison antiquus was rare or absent west of central Arizona, and Folsom remains are correspondingly sparse beyond that boundary. Overall, the Folsom occupation represents a shrinkage of PaleoIndian territory.

The vegetational pattern in the Southwest during Folsom times was a mosaic of interspersed grasslands and woodlands. Judge (n.d.:61) suggests that this vegetational pattern would have prevented formation of large bison herds. It is significant the Folsom kill sites display an average of only 15.25 bison, compared with 98.25 in later Plano sites (Judge n.d.:61). Apparently, more pronounced seasonality following Folsom times led to replacement of the pine-parkland mosaic by open, grassy plains which permitted aggregation of bison herds.

Distinctive indicators of the Folsom period are, of course, the Folsom points (Fig. 1). Other characteristics, listed by Irwin-Williams (n.d.), include well-made end scrapers, side scrapers (in reduced frequency from previous time periods), perforators, spurs, knives, denticulates and raclettes.

In the overview area, Folsom remains have been recovered from the Lucy site (Roosa 1968:75), and elsewhere in the Estancia Basin (Hurt 1942; Campbell 1951; Roosa 1968; Lyons 1969). To the south, Folsom remains have been reported from the

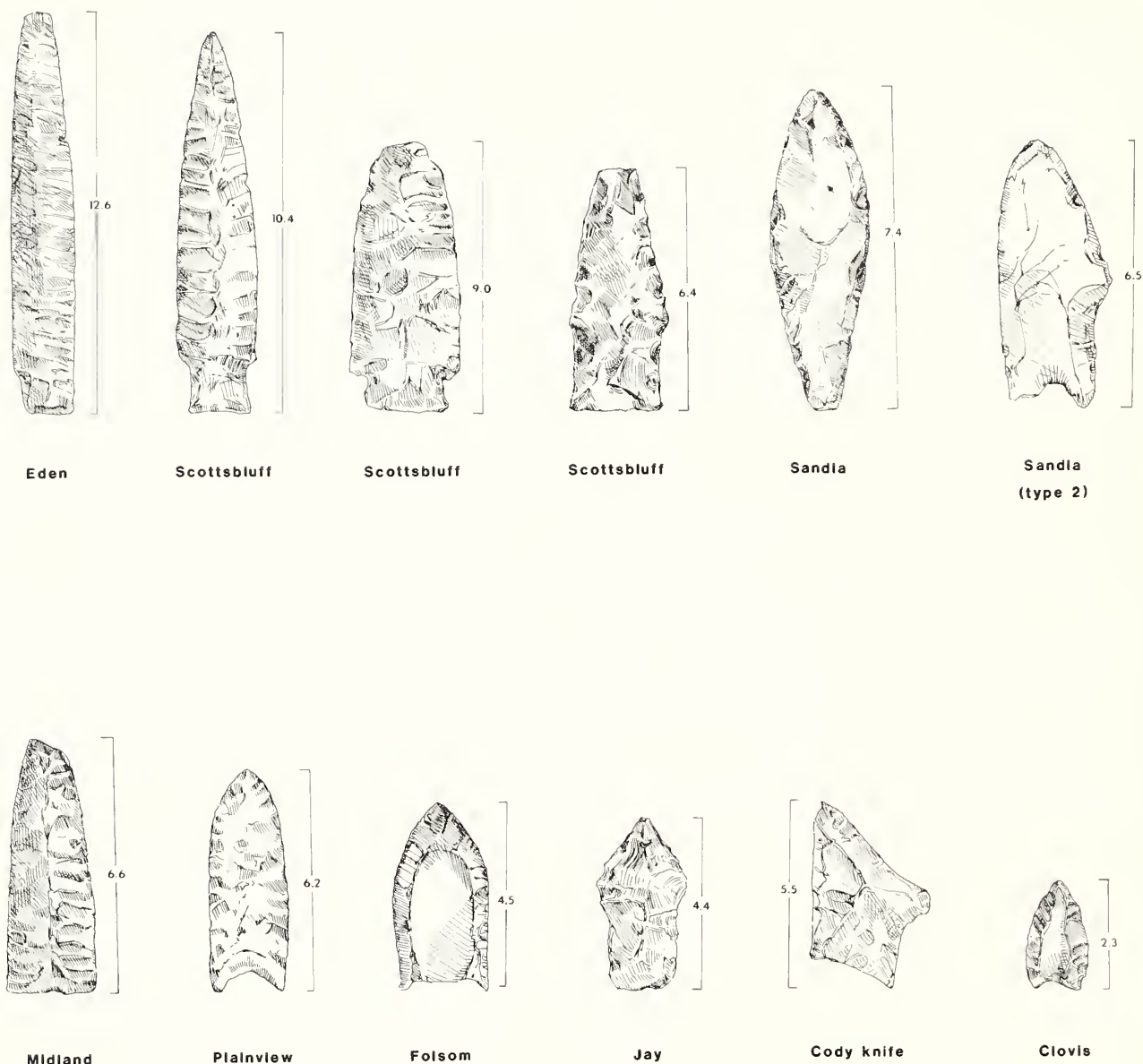


Figure 1. Early Projectile Points. All measurements are given in centimeters.

Mockingbird Gap site (Hammack 1964), near Polvadera (Anzalone 1973), and from the area of Socorro (R. Weber, personal communication).

#### Plano Complexes

PaleoIndian occupation in western New Mexico following the Folsom period is problematic. A temporal sequence for the High Plains has been postulated and has been summarized (as shown below) by Irwin-Williams (n.d.). The position of the Alberta complex in this sequence is questionable, since it may be restricted to the northern Plains.

| <u>Date Span</u> | <u>Complex</u> |
|------------------|----------------|
| 8300-7500 B.C.   | Agate Basin    |
| 7500-7000 B.C.   | Hell Gap       |
| 7000-6500 B.C.   | Alberta        |
| 6600-6000 B.C.   | Cody           |

Irwin-Williams (n.d.; Irwin-Williams and Haynes 1970) postulates a continual pattern of decreased moisture following Folsom times (see Table 2). She interprets this as leading to reduced occupation in western New Mexico during Agate Basin times, and to sparse or intermittent occupation in the area between 7500 and 6600 B.C.

Table 3

## Sequence of Pleistocene and Holocene Events in the Estancia Basin\*

| EPOCH       | CLIMATIC<br>SUBDIVISION | YEARS B.P.   | EVENTS                                                                                                                                                                                                                                           |
|-------------|-------------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HOLOCENE    | Medithermal             | 0-4,000      | Deflation of playas in bed of desiccated Lake Estancia. Dune formation and reworking in basin area.                                                                                                                                              |
| HOLOCENE    | Altithermal             | 4,000-7,500  | Completion of desiccation of Lake Estancia.                                                                                                                                                                                                      |
| HOLOCENE    | Anathermal              | 7,500-10,000 | Beginning of formation of prominent, extant, interior beach terraces and continuation of bar and spit formation. Beginning of perennial stream desiccation.                                                                                      |
| PLEISTOCENE | Cochrane                | 10,150-      | Continuing desiccation of Pleistocene Lake Estancia. Continuing encroachment of Pinos Mountain dunes.                                                                                                                                            |
|             | Advance                 | 10,300       |                                                                                                                                                                                                                                                  |
| PLEISTOCENE | Valders                 | 9,000?-      | Encroachment of Pinos Mountain dunes.                                                                                                                                                                                                            |
|             | Recession               | 11,500       |                                                                                                                                                                                                                                                  |
| PLEISTOCENE | Valders                 | 11,500-      | Oscillation in desiccation of Pleistocene Lake Estancia.                                                                                                                                                                                         |
|             | Advance                 | 11,800       |                                                                                                                                                                                                                                                  |
| PLEISTOCENE | Two Creeks              | 11,800-      | Continuing desiccation of Pleistocene Lake Estancia.                                                                                                                                                                                             |
|             | Interstadial            | 12,300       |                                                                                                                                                                                                                                                  |
| PLEISTOCENE | Mankato                 | 12,300-      | Oscillation in desiccation of Pleistocene Lake Estancia.                                                                                                                                                                                         |
|             | Substage                | 13,000?      |                                                                                                                                                                                                                                                  |
| PLEISTOCENE | Glacial                 | ?-           | Deposition of the clay of the Big Sink.<br>Deposition of marl of Cedarvale and beginning of desiccation of Lake Estancia: 16,000-19,000 years B.P. Deposition of Rattlesnake Hills clastics and formation of bars and spits: 19,000-? years B.P. |
|             | Maximum                 | 19,000       |                                                                                                                                                                                                                                                  |

\* After Lyons (1969: 44). Reproduced by permission of the author.

The extent to which west-central New Mexico experienced reduced occupation between Folsom and Cody times remains to be determined. Irwin-Williams and Haynes (1970) believe that there was an actual withdrawal of Plains-based hunting populations from the area. Even if reduced moisture in this period led to reduced opportunities for hunting megafauna, though, it is likely that other elements of a subsistence system would have remained intact. If so, then sizable populations may have existed in the area by following a subsistence strategy that did not concentrate on megafauna. Such populations might

not produce the distinctive projectile points so consistently associated with megafaunal exploitation. They would be far more difficult to recognize archeologically than if they conveniently had dropped lanceolate points about the landscape.

The relative lack of commonly accepted indicators of occupation between Folsom and Cody times may, then, mean one of two things. Either there was a lack of human population in the area, or simply a lack of commonly recognized indicators.



In any case, Judge (1973:69-72) has documented the presence in the Middle Rio Grande Valley of a megafauna-exploiting population which he places temporally between Folsom and Cody. Termed the Belen occupation, it has been neither stratigraphically placed nor absolutely dated, but it does display technological similarities to the Plainview, Midland, and Milnesand complexes. Belen sites have been documented only from the area of Judge's survey. The fact that the Belen complex has not been documented outside of the Middle Rio Grande Valley argues against the interpretation of population movements between the Plains and this portion of west-central New Mexico.

A diversity of PaleoIndian complexes characterized the study area following Folsom. The Lucy site has yielded Midland, Cumro, Agate Basin, and Scottsbluff points (Roosa 1968). Elsewhere in the Estancia Basin researchers have found Agate Basin, Yuma, and possible Hell Gap-related points (Hurt 1942; Campbell 1951; Roosa 1968; Lyons 1969). In the northeastern Manzano Mountains, Plainview and Cody manifestations have been located (Garber 1982). The Yuma, Eden, and Cody complexes are represented at the Mockingbird Gap locality (Hammack 1964). Agate Basin, Plainview, and Cody materials have been found around Socorro (R. Weber, personal communication).

The projectile point terminology followed by some PaleoIndian specialists in the overview area merits clarification. The term "Cumro," applied by Roosa to one point from Lucy, designates a kind of point also called "oblique Yuma" (1968:84). These have been found in association with extinct bison near Cumro, Nebraska. "Yuma" is a generic term applied to a variety of point forms. Wormington (1957:103-107) considers the term, and associated point descriptions, to be so generalized as to be meaningless. She suggests that some Yuma points can be assigned to the Eden and Scottsbluff categories, and others to Plainview, all three of which have been found in the overview area. There is considerable temporal variation between the earlier Plainview on the one hand, and the later Eden and Scottsbluff, on the other. Hence, the term "Yuma," when applied to finds in central New Mexico, indicates little other than a Plano occupation.

A projectile point frequently found in the Estancia Basin has been referred to as "J" (see

Fig. 1). Roosa (1968:69) discerns two types of J points at the Lucy site: wide and narrow blades. He suggests that the wide blade variety shows close similarities to Agate Basin and Hell Gap, and may indeed actually be Hell Gap points. The narrow blade, in contrast, shows similarities to the succeeding Archaic period Pinto Basin points (Roosa 1968:71). Lyons also classifies J point as PaleoIndian (1969:68).

More recently, Cynthia Irwin-Williams (1973:4-5), on the basis of work in the Arroyo Cuervo region, has assigned J points to the initial Archaic period, renaming the complex "Jay." She dates this complex in the interval from 5500-4800 B.C. In the Arroyo Cuervo region Jay populations appear to have followed a distinctively Archaic adaptation emphasizing a mixed spectrum resource base. In the Estancia Basin, however, Jay populations may have continued to exploit megafauna since, as Lyons and Switzer (1975) have shown, Pleistocene fauna may have survived in this area to as recently as 2000 B.C.

Thus, the classification of Jay points in the Estancia Basin as PaleoIndian may be disputable on technological and temporal grounds. The possibility exists, nevertheless, that early Archaic populations in this area may have retained some elements of the earlier subsistence base.

#### The Estancia Basin

The sequence of Pleistocene and Holocene climatic changes in the Estancia Basin (Table 3) exerted a substantial influence on human occupation of the area. The most significant influence came from the series of late Pleistocene and early Holocene lakes which formed in the basin. Antevs (1935) estimated that an annual precipitation of 20 inches, with a year-round mean temperature of 47 degrees Fahrenheit, would sustain the lake at a level of 6,210 feet elevation. He suggests that such conditions occurred between 12,000 and 10,000 B.P.

Antevs later suggested that if the June to September temperature was 10 degrees Fahrenheit lower than at present, and if annual evaporation from the lake was about 33 inches, then precipitation would have to have been about 23 inches to maintain the lake level (1954). Leopold (1951) proposed that 21 inches of precipitation would have maintained the lake at its high stage, but that with no decrease in



temperature 30 inches would have been needed. This possibility would have brought the pine/spruce border down to the lake margins. Harbour estimated that 31 inches of moisture would have been required to maintain the level at 6,210 feet (1958:26).

Bachhuber (1971) has conducted an extensive study of the pluvial history of the Estancia Basin. He sees three major episodes of lake formation in the basin during periods when human populations are likely to have been present (Fig. 2). The first of these, Late Lake Estancia, was the most extensive (Map 5). It is estimated to have existed between 12,000 and 10,500 B.P. This last figure is based on soil deposition rates (Bachhuber 1971:211). A period of drying and salinity ensued which is termed the Estancia Playa Complex. This was followed by Lake Willard, which reached its maximum stage around 7500 B.P. The final major stand was Lake Meinzer which, Bachhuber estimates, reached its maximum extent around 3000 B.P. Lyons, though, believes that this last lake reached complete desiccation by 4000 B.P. (1969:63).

Bachhuber and McLellan (1977) have noted the presence of fossil marine Foraminifera in the early stages of both the Late Lake Estancia and the Lake Willard pluvial maxima. The particular species present, which were probably introduced by shore birds, are Protelphidium orbiculare and Criboelphidium selseyense. These occur today in restricted ecological contexts. The context of Protelphidium orbiculare is more limited. Its southernmost distribution, in the Arctic, coincides closely with the 10 degree centigrade mean August surface-water isotherm. In recent times the mean August air temperature in the Estancia Valley has been 19.7 degrees Centigrade. With no thermal stratification, maximum lake temperature would closely approximate the warmest mean monthly temperature. This suggests that August air temperatures in the Estancia Valley early in the Late Lake Estancia and Lake Willard maxima were depressed 9.7 degrees centigrade. Bachhuber and McLellan (1977:262) note that this figure compares favorably with the results of simulation studies of ice age climates using a global atmospheric model.

Roosa (1968:144-145) notes that Lake Estancia contained no permanent inflow. He believes that the lake would have been saline or brackish, with no resources usable by human populations. There

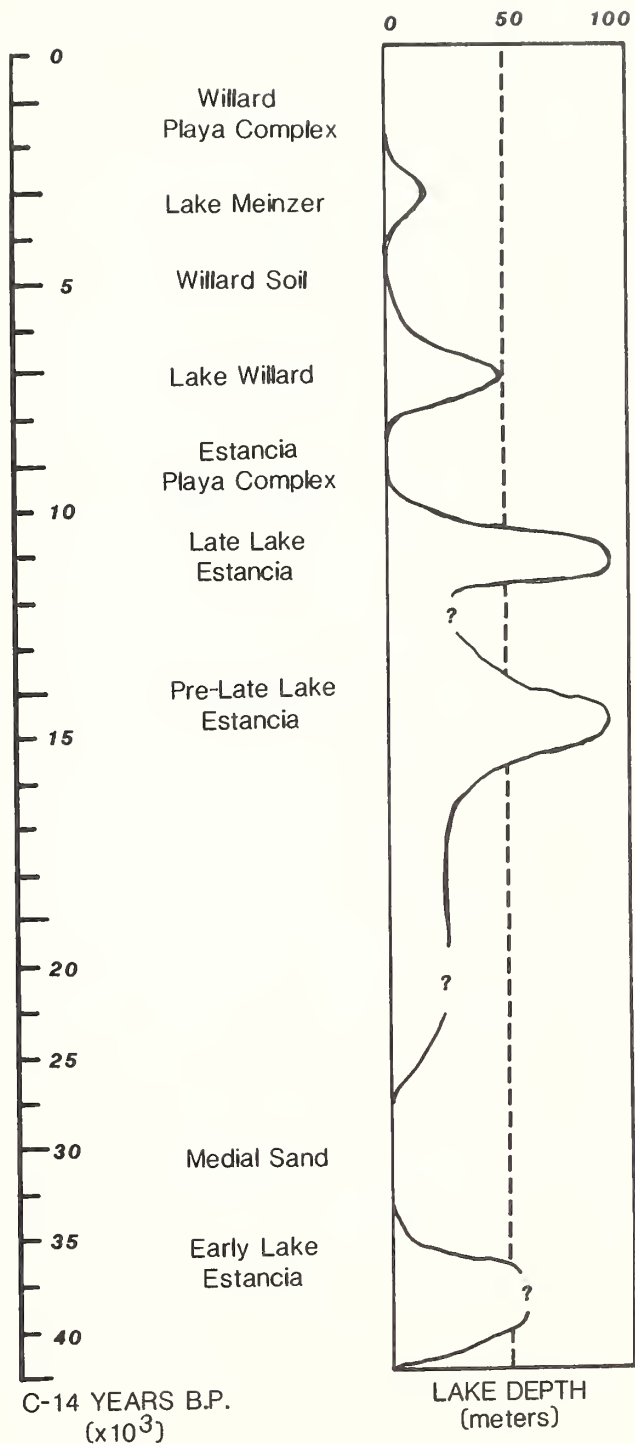
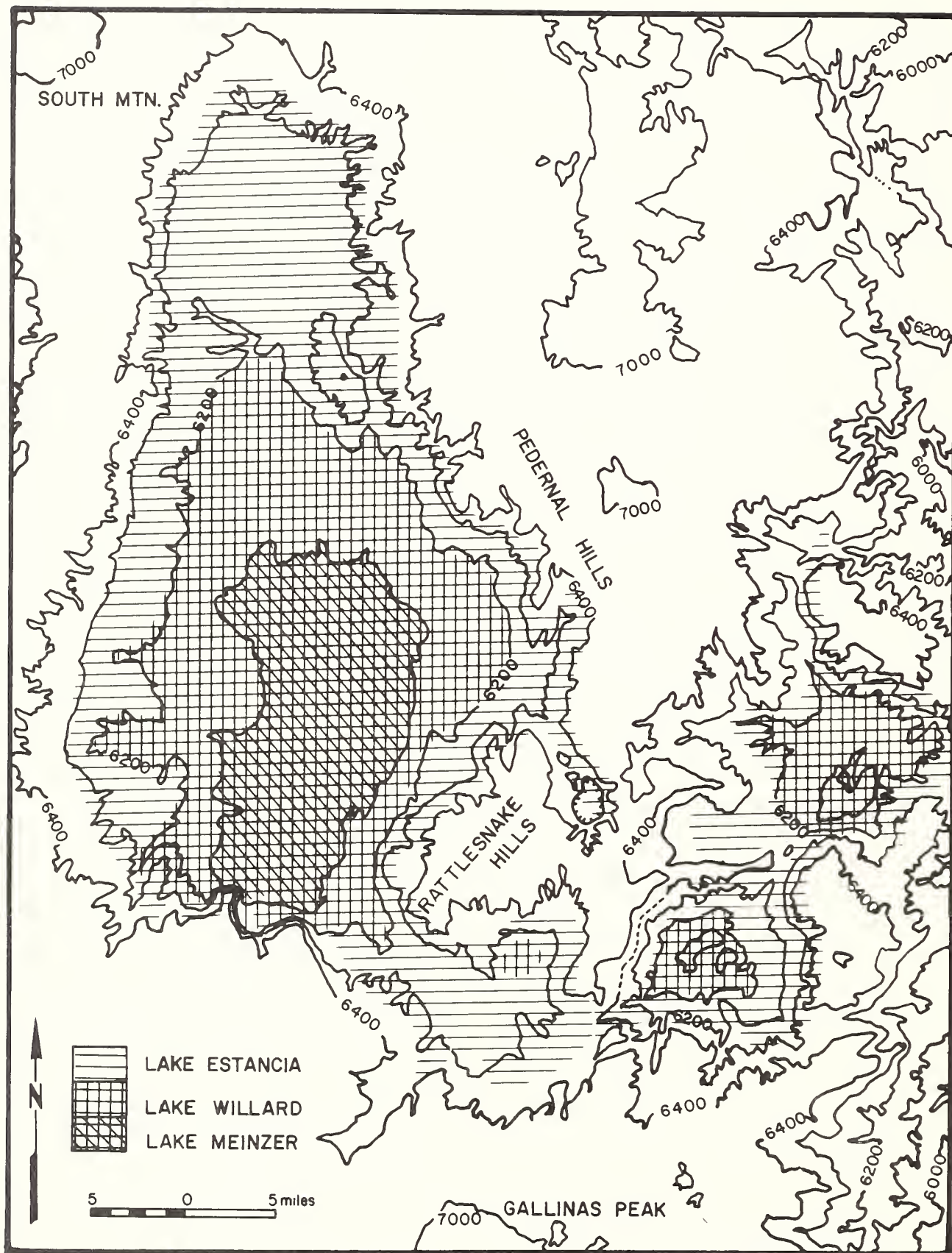


Figure 2. A generalized stratigraphic section also showing pluvial lake depths in the Estancia Valley During the Quaternary (after Bachhuber 1971:198). [Note: compare with Map 5 on the following page.] Reproduced with permission of the author.

was, therefore, little reason to camp on its shores. As a consequence, virtually all of the



Map 5. Areal extent of Estancia Basin pluvial systems (after Bachuber 1971:206).

PaleoIndian sites, and especially the larger ones, were located on a stream, a pond, or a small playa lake.

Although the Estancia Basin lakes were probably not potable during most of their existence, there were episodes when lake levels rose to overflowing. Then the water was at least relatively fresh. During these periods of high water, lacustrine resources usable by human populations were present, including Salmo clarki, cutthroat trout (Bachhuber and McLellan 1977:254-255).

Roosa (1968:175) suggests that vegetation zones at the end of the Pleistocene would have been depressed about 1,000 feet. An open parkland prevailed in the Estancia Basin at that time, dominated by pinyon/juniper or possibly Ponderosa.

PaleoIndian sites in the Estancia Basin tend to cluster at the northern and southern ends. Lyons (1969:73) suggests that the reason for this concentration was access to and from the High Plains to the east. Access west to the Rio Grande Valley would have been easiest through Abo Pass at the southern end of the basin. This suggests to Lyons (1969:82) that Abo Pass may have been one of the most heavily traveled PaleoIndian routes. PaleoIndian remains have recently been found near this pass (K. P. Medlin, personal communication).

#### The Lucy Site

The Lucy site, located in the southeastern portion of the Estancia Basin, was excavated under the overall direction of Frank Hibben during the summers of 1954 through 1957, except for 1956 when Florence Ellis was in charge. In the summer of 1959 William B. Roosa spent three weeks on the site under the auspices of the University of Michigan (Roosa 1956a, 1956c, 1968).

The Lucy site at present consists of a series of blow-outs. A diversity of archeological remains ranging from PaleoIndian to recent Apache or Comanche artifacts occurred on the surface, along with mammoth and bison remains. While exposing a portion of a long bone, Hibben found a Sandia Point. The Lucy site thus held the potential for answering some of the questions concerning pre-Clovis occupation of this hemisphere.

The most complete stratigraphic section, and the

most abundant in situ finds, were made in Roosa's Trench I. Roosa characterized the strata in this trench as consisting of ". . . a series of waterlaid deposits and pond bottoms, which were cut into by an old erosion surface and covered in places by old stabilized dunes and modern dunes" (1968:30). The Sandia points, some of which were found in situ, were probably associated with proboscidean remains. In one place Roosa characterizes these remains as probably mammoth (1968:34), but elsewhere describes them as mastodon (1968:189). He suggests that the Sandia finds represent a mammoth kill made on the edge of a pond (1968:35).

The Lucy site yielded two varieties of Sandia points. Following the typology established by Hibben (1941:24-25), Type 1 Sandia points (Fig. 1) have an elongated elliptical shape with a step or shoulder in one edge near the base. The rounded base is more blunt and thicker than the tip. They are bi-convex in cross-section, and range from lenticular to diamond shaped. Type 2 Sandia points are more nearly parallel-sided with concave bases and attempts at basal thinning on some specimens. Type 2 Sandia points are occasionally fluted (Roosa 1956b:41-42).

Seven Type 1 points and six Type 2 were recovered at the Lucy site. Four of the latter were fluted. Roosa believes that one of the unfluted Type 2 points is similar to Agate Basin points, and proposes a close linkage between the two (1968:40).

Type 1 Sandia points at the Lucy site tend to be longer than Type 2. The length range for Type 1 is 59.5-109.5 mm. The range of Type 2 is 59-66 mm. Roosa suggests that the Type 1 points, especially the long ones, were actually knives, while the Type 2 forms were projectile points. The notion that at least some Sandia "points" may actually have been knives is an idea with which many scholars would be in agreement (e.g., Judge n.d.:13).

Roosa suggests that morphological variation in Sandia points may reflect the idiosyncrasies of individual makers. Based upon this, he suggests that the points recovered from Lucy were made by three or four men, and so extrapolates a total of nine to twenty persons occupying the site (1968:47-51).

The dating of the Sandia remains at the Lucy site, like the dating of the original finds in



Sandia Cave, is controversial. Roosa believes that the Sandia complex as a whole is late Pleistocene and may be roughly contemporary with, or older than, Clovis (1968:187). However, the stratigraphy of the Lucy site could not confirm the postulated pre-Clovis age for Sandia. The geology of the Lucy site has been investigated by Harbour (1956), who confirms the late Pleistocene estimate for the Sandia materials. Roosa (1968:62) figures the Sandia complex at Lucy to be early Valdres maximum, probably ca. 11,500 B.P. However, he acknowledges that a radiocarbon determination on caliche of 14,300 years B.P. may be a correct age assessment (Roosa 1968:65). Lyons, in a later estimate, concluded that the Sandia complex dates to about 20,000 B.P. (1969:27). He based this assessment on the geomorphology of the Lucy site (personal communication).

In addition to the Sandia remains, Roosa mentions four small bifaces recovered at the Lucy site from possibly earlier deposits. He describes what he terms a "retouched Levallois" point from the floor of Trench I, and suggests that it may be pre-Sandia (1968:43, 45). Other PaleoIndian remains from the site included Clovis, Folsom, Midland, Cumro, Agate Basin, and Scottsbluff points. These remains span essentially the entire PaleoIndian sequence. The Clovis point was found with scattered mammoth remains, and may represent a kill. Two Folsom areas were located on the site. Both Folsom and Midland remains were found in each. A variety of Archaic and later materials was also recovered.

Noting the association of excavated Sandia remains with high diversity terrain, Roosa proposes that the subsistence base of these early populations involved more than just megafaunal exploitation, and may have included a diversity of smaller game and plant foods (1968:195-196). This interpretation is echoed by Judge's (n.d.) suggestion that pre-Clovis adaptations were more highly diversified than later strategies. However, Roosa suggests that both the Clovis and Folsom subsistence strategies in the area were also diversified (1968:223, 261-262). This contrasts with the standard interpretation that Clovis and later populations concentrated on megafaunal exploitation.

#### The Sandia Controversy

The possible pre-Clovis occupation of central New Mexico that is represented by Sandia complex was

first uncovered at Sandia Cave in the northern Sandia Mountains. This cave, one of several in the vicinity, was first excavated by Frank Hibben of the University of New Mexico (1937, 1941).

The stratigraphy of Sandia cave is crucial to the chronological interpretation of the complex. Most important is the relationship between the Folsom layer, which overlay a sterile, yellow ochre stratum, and the underlying Sandia deposits. The Folsom layer was highly consolidated, and contained Folsom points and other artifacts. These tended to concentrate near the mouth of the cave. Underlying the Folsom level was the yellow ochre layer, a finely laminated, water-laid deposit. The Sandia layer, under this, was similar in composition to the Folsom level but was less highly consolidated. Other materials in this layer included a variety of non-diagnostic tools and two charcoal-filled hearths. One of these was surrounded by a ring of limestone boulders. Various attempts at geologically cross-dating the cave deposits, and at radiocarbon dating, have produced age estimates for the Sandia materials ranging up to, and exceeding, 20,000 years.

No sooner had the first report on the site appeared (Hibben 1937) than controversy began. This controversy has been summarized by Stevens and Agogino (1975). Discrepancies appeared as to how the site and its contents were discovered, and as to who was in charge of the 1936-37 excavations. Contradictions surfaced between Hibben's 1937 report and later reports about the Pleistocene fauna found on the surface inside the cave. The descriptions of the stratigraphy published by Hibben in 1937 and 1941 have contradictions in details of the important yellow ochre layer separating the Folsom and Sandia layers. The possibility exists that rodents may have disturbed the deposits.

The list of problem areas is lengthy. The radiocarbon determinations obtained from the cave are so controversial and confused as to be unreliable. Published photographs showing artifacts in situ were actually taken of chunks of the consolidated deposits that had been removed to the laboratory. The published reports contain discrepancies in the locations of materials found in the cave, and there are inconsistencies in descriptions of the hearths. There are contradictions between faunal lists published at different dates and, even though the faunal remains were fragmentary, species

identifications were given.

Based upon the suggestion that at least some of the Sandia points may have been knives, Stevens and Agogino (1975:46) have proposed that the use of the cave was for mining ochre, and that the points were employed for this purpose. The identification of some points as knives suggests that, as a multi-purpose tool, their spatial and chronological distribution might not have been as restricted as that of the more common PaleoIndian point forms.

Sandia points are indeed widely distributed (e.g., Hibben 1946), but neither Sandia Cave nor the Lucy site have yielded data which resolve the chronological controversy. The association of Sandia materials with mammoth remains at the Lucy site is not useful for dating because mammoth in the Estancia Basin may have persisted to as late as 2000 B.C. (Lyons and Switzer 1975). Nevertheless, Harbour's (1956) assessment of the geomorphology of the Lucy site did place the Sandia remains at the terminal Pleistocene, but this in itself is not a sufficient basis for assigning a pre-Clovis age to Sandia.

Indeed, continuing the search for or against chronological priority for Sandia may be a fruitless endeavor. The assumption behind this search is that the diagnostic Sandia artifacts functioned in the same ways as the supposedly diagnostic artifacts of later PaleoIndian complexes. That is, it is assumed that PaleoIndian point forms represent stylistic sharing within limited temporal and spatial distributions. This assumption is implicit in the search for a date for Sandia points.

Judge, however, has argued that PaleoIndian points can be separated into generalized forms (combined cutting/piercing functions) and specialized forms (piercing) (n.d.). This would suggest that the factor of style sharing may not be the exclusive element in understanding their temporal and spatial distributions. A similar consideration would apply to the Sandia points. It is possible that Sandia sites may simply have been functionally specialized types of activity centers, used during many time periods and in many areas, rather than the settlements of a temporally restricted technological complex.

#### PaleoIndian in the Estancia Basin

Beginning in June, 1964, Thomas Lyons began an

archeological reconnaissance of the Estancia Basin (1969). A total of 48 sites were found by consultation with the literature on the area, or in field survey. Five of the sites represented late prehistoric Anasazi or Plains occupation, four were non-diagnostic, while all others contained PaleoIndian and/or Archaic remains. Eight sites contained J materials, which Lyons classifies as PaleoIndian (1969:68).

Lyons suggests a relationship between J and Hell Gap and, combining this with the topographic placement of J sites in relation to lake stands, proposes that the J sites may date between 10,000 and 7,500 B.P. in the area. Lyons believes that J may be contemporary with Folsom, or may slightly pre-date it (1969:169). This temporal placement is, of course, at odds with the 5500-4800 B.C. dating which Irwin-Williams has assigned to the Jay complex (1973). More will be said of this topic in the Archaic section of this chapter.

Of the PaleoIndian sites that Lyons encountered, three had Sandia materials (including Lucy). Six Clovis manifestations were recorded, 10 Folsom, and 15 Plano. The Plano sites were distributed all around the lake shore but, like the Folsom manifestations, concentrated at the northern and southern ends. As noted above, such locations provided the best access to adjacent regions.

Lyons records two localities which he believes are not only pre-Clovis in age, but indeed pre-Sandia. He terms the archeological remains at these sites the "Estancia Complex," and suggests that they date prior to 19,000 B.P. (1969:87-104).

The two sites in question, West Otto and East Keen, are both found on low hills capped by outcrops of Glorieta sandstone. This has partially metamorphosed into quartzite, and a large number of quartzite implements was found on each site. The dating of these sites is based on geomorphological considerations. On both hills, the lower distribution of artifacts terminated at the shore line of Lake Estancia. This suggests that the hills were occupied before the desiccation of the lake began, that is, before 19,000 B.P. (Fig. 2). At West Otto, quartzite outcrops occurred at the base of the hill as well as at higher elevations. The higher outcrops were used for tool production, while the lower ones were not, suggesting that Lake Estancia prevented access to these.

Lyons characterizes the manufacturing technique of the Estancia Complex implements as Mousterian rather than Levalloisian. He lists the characteristics of this complex as follows (1969:90):

1. Comparatively unskilled lithic manufacturing techniques.
2. Percussion flaking.
3. Predominance of plano-convex forms.
4. Mix of prepared and unprepared striking platforms.
5. General massiveness of size.
6. Presence of flake and core tools.
7. Lack of projectile points.
8. Basal thinning and shouldering of cutting implements.
9. High frequencies of:
  - A. Pointed instruments that might be described as picks, gravers, or perforators.
  - B. Chopping and scraping tools.
  - C. Hammerstones and anvils.
10. Preferential use of Glorieta quartzite.

Lyons infers that the following tool types are present in the assemblages:

1. Flake knives shouldered for hafting.
2. A few blade knives.
3. Lunate knives.
4. Flake scrapers.
5. Sawtooth cutting implements or denticulated scrapers.
6. Nipple gravers.
7. Perforators or drills.
8. Sharply keeled or ridged pointed implement or "picks."
9. Fist axes or choppers.
10. Spokeshaves.
11. Cores.
12. Utilized flakes.
13. Hammerstones.
14. Anvils.

This is clearly a diversified tool kit, representing a variety of activities. Lyons suggests the following uses for these tools:

1. Large game processing.
2. Breaking bones for marrow.
3. Bone cutting or graving.
4. Fish scaling with lunate knives and blades.
5. Shredding coarse vegetal material.
6. Cutting wood.

7. Graving or grooving wood.
8. Boring or perforating wood.
9. Fashioning wood with gouges or hafted adzes.
10. Fashioning wood with spokeshaves.
11. Preparing wood for shelter.
12. Preparing rafts or other similar water transport.
13. Manufacture of preforms for finishing elsewhere.

Measuring the edge angles of these tools, Lyons notes that the Estancia Complex knives fall into the 26-35 degree interval, while the plano-convex tools are in the 65-75 degree range. Following Wilmsen (1968, see 1970), Lyons suggests that this last class of implement may have been used in woodworking, bone-working, skin softening, or heavy shredding.

If Lyons's functional inferences are correct, this diversified tool kit would indicate a multi-activity locality. Such multiple activities suggest the possibility of a base camp. Lyons reports no other characteristics that would indicate a base camp, however, such as structures or midden development. More likely, these were quarry locations which were repeatedly utilized for whatever activities groups in the area were pursuing at any time. These activities included, at various times, butchering and associated activities, plant food processing, and woodworking.

Given the possibility that these sites functioned as special activity loci, Lyons' characterization of the Estancia Complex should be regarded cautiously. It is most likely a characterization of only a limited subset of the technological repertoire of whatever populations used the locality.

Proceeding to an analysis of later occupations, Lyons attempts to estimate the number of PaleoIndian occupants in the basin at various times. He bases these estimates on average band size and site loss rates. Lyons estimates a total Clovis population of 550, Folsom 721, and Plano 361 (1969:153-156).

In summary, Lyons sees the PaleoIndian sequence in the Estancia Basin as beginning with the Estancia Complex, dated at sometime more than 19,000 years ago, followed by the Sandia occupation, at about 20,000 B.P. A hiatus in occupation separated Sandia from Clovis. Clovis



in turn was succeeded by Folsom and the various Plano complexes, with PaleoIndian occupation of the basin ending about 6000 B.P.

#### Mockingbird Gap

The Mockingbird Gap site is an extensive PaleoIndian site, one of several located in the northern Jornada del Muerto. It was first recorded by Hammack (1964), and was later discussed by Marshall (1976). The major work on the site has been carried out by George Agogino of the PaleoIndian Institute, Eastern New Mexico University, and Robert Weber of the New Mexico Institute of Mining and Technology. Their work has been reported in a number of papers (Weber 1973b; Weber and Agogino 1966, 1967, 1968, 1970; Agogino and Weber 1970). Weber's work at the site continues, and a final report has not yet been prepared.

The site itself is situated on a low, arcuate, sandy ridge and adjacent terrace that border a shallow arroyo. Clovis material on the site occurs in eight clusters. There are some later PaleoIndian materials, including a possible PaleoIndian structure (a posthole pattern suggesting a lean-to) near a Cody concentration, as well as Archaic and Puebloan material. The site overlooks Mockinbird Gap, a principle access route between the Jornada del Muerto and the Tularosa Basin to the east.

The Mockingbird Gap site contains a diversified tool kit, more varied than that customarily found on Llano kill sites. There is also a high frequency of basal point sections. These two characteristics suggest that the site was a camp rather than a special activity locale.

During excavations, a number of Clovis points were found which had been broken during manufacture. These allowed Agogino and Weber to piece together, for the first time, the sequence of Clovis point production. Bi-faced blanks were initially shaped to resemble the finished point in profile. Striking platforms for fluting were prepared by the removal of small lateral flakes from either side of a central platform, which was also ground prior to fluting. Damaged tips suggest the use of an anvil to support the point during fluting. Once the initial flute was removed the entire procedure was repeated on the opposite face. Final retouching and shaping usually took place after fluting although, in one case, this process was reversed.

The small size of these Clovis points (less than 50 mm.), and the occasional presence of edge retouch, are reminiscent of Folsom, as are many point profiles. Clovis points usually lack the carefully prepared striking platform characteristic of Folsom, but the Mockingbird Gap Clovis points have these. To Agogino and Weber, these characteristics suggest that Mockingbird Gap is a transitional Clovis/Folsom site. They do not define what they mean by "transitional." Their findings are significant nevertheless, for they suggest that the shift from Clovis to Folsom involved gradual technological adjustments rather than abrupt replacement.

It is noteworthy that most PaleoIndian sites in the Mockingbird Gap locality are Folsom, and that the Mockingbird Gap style of Clovis point was found associated with bison at a site four miles away. Clovis populations are usually thought to be associated with mammoth remains, so the use of bison reinforces the late Clovis interpretation.

The raw materials used to fashion the implements found at Mockingbird Gap include jasper, chert, chalcedony, flint, quartzite, and obsidian. Most of these came from quarries and gathering areas within a 35 mile radius of the sites. A considerable amount of the lithic raw material was derived from pebbles in local gravels. A small amount, however, came from such distant sources as the Alibates flint quarries in the Texas Panhandle, and the Chuskas of the western San Juan Basin.

#### PaleoIndian in Surrounding Areas

The central New Mexico overview area is surrounded by regions displaying the remains of substantial PaleoIndian occupation. To the west, the Plains of San Augustine (Berman 1979), the west side of the northern Ladron mountains (G. Agogino, personal communication), and the central Rio Grande Valley (Judge 1973) display abundant PaleoIndian remains. In this last area, Judge (1973) found evidence of Clovis, Folsom, and Cody occupations, as well as a complex termed Belen which he placed chronologically between Folsom and Cody. Three types of settlements were discerned: base camps, producing large numbers of implements; armament sites, characterized by projectile point production and scrapers displaying hard wear; and processing sites, with point bases and scrapers displaying soft wear. Judge suggests that, through time, conditions in his study area became drier, causing shifts in

the movement of game, and corresponding shifts in the settlement patterns of PaleoIndian hunters. To the east of the overview area, on the plains of eastern New Mexico, PaleoIndian occupation was extensive.

If Irwin-Williams (n.d.; Irwin-Williams and Haynes 1970) is correct in her suggestion that decreased moisture forced depopulation of west-central New Mexico between 7500 and 6600 B.C., this phenomenon should be evident in the Estancia Basin and in the northern Jornada del Muerto. If there was indeed a Cody reoccupation of western New Mexico by plains-based hunters, then the earliest Cody sites in the overview area should pre-date those farther west. Similarly, during the proposed abandonment of western New Mexico during the Agate Basin period, the latest Agate Basin sites in the western part of the state should be found in the overview area.

#### PaleoIndian Research Problems

In her overview of the middle Rio Grande Valley, Linda Cordell (1979:17) listed problems involved in the study of the PaleoIndian phenomenon. These include (1) geological processes which have covered earlier remains, (2) the ephemeral nature of archeological remains left by mobile, low density hunters and gatherers, (3) relative scarcity of diagnostic indicators of PaleoIndian occupation, and (4) lack of detail in paleoenvironmental reconstruction. Cordell makes the telling point that Middle and Upper Paleolithic archeology in Europe, despite facing these same problems in magnified form, has nevertheless produced considerable knowledge. Perhaps even more limiting than the technical problems Cordell listed is the relative lack of explicit, problem-oriented research designs focused on PaleoIndian phenomena. Most PaleoIndian studies have tackled research problems on an opportunistic basis, surveys and excavations being conducted as attractive possibilities have appeared. Such a hit-or-miss approach will not quickly resolve the outstanding research problems in the overview area.

#### The Sandia Problem

No discussion of the PaleoIndian prehistory of central New Mexico can omit the Sandia phenomenon, although it is distinctly possible that this will someday come to be less of a problem than it has been for the past fifty years. To a certain extent, the degree to which

Sandia, or other potentially early complexes, present a problem is determined by the research goals of the profession. So long as the archeological profession, or segments of it, focus on historical questions, Sandia will remain a puzzle.

To the degree that the focus of interest shifts toward more anthropological concerns such as the subsistence bases, settlement patterns, social organization, and population dynamics of the PaleoIndians, the question of finding the earliest New World archeological complex becomes less important. Nevertheless, the profession continues to find early complexes a significant research area, and so the controversy over Sandia Cave will continue.

No matter how well a research program focused on the Sandia question is designed, the possibility of finding properly stratified deposits will always be uncertain. Hence, focusing research on Sandia chronology may be unprofitable. Insight into this phenomenon can probably be gained, though, from a functional analysis of Sandia tools. Lyons reports wear, polish, and striations on Sandia points that indicate use as knives as well as projectile points (1969:118). Stevens and Agogino (1975:46) propose that the points found in Sandia Cave were used for mining ochre. These observations and interpretations may have important implications.

If Sandia points represent a style, of presumably short duration, then they may well be found to hold a distinctive position in PaleoIndian chronology. But if they were a generalized, multi-purpose implement, designed for function rather than style, then the likelihood is reduced that they might serve as temporal indicators. The possibility then arises that Sandia points may have been used in specialized contexts over a long temporal range, and throughout a broad geographical area. If so, then the resolution of the Sandia chronological controversy would no longer seem to be crucial. It is significant in this regard that, when Hibben published his account of the first 38 Sandia points (1946), this was only a fraction of the number of Sandia-like items reported to him; the remainder did not fit securely into Hibben's conception of the Sandia complex.

#### Subsistence-Settlement Systems

One of the most significant problems in



PaleoIndian research is the extent to which the early subsistence base was a focal one, concentrated on the hunting of megafauna. Both Judge (n.d.) and Irwin-Williams (n.d.) believe that this is so, although admitting minor additions to the diet from other sources. Archeologists who have worked in the overview area, in contrast, believe that PaleoIndian subsistence in this region was more diversified (Roosa 1968:195-196, 233, 261-262; Lyons 1969:172).

On an a priori basis, the idea that PaleoIndians specialized in megafaunal exploitation is difficult to accept. A diversified subsistence base is the common pattern among ethnographically recorded hunters and gatherers (Lee 1968) and, except in the Arctic, it is unheard of for an entire subsistence base to be concentrated on a single faunal resource. It is not likely that the PaleoIndians would have been so anomalous.

In an earlier discussion of this topic (Tainter and Gillio 1980:39-41) data from Judge's (1973) survey of the central Rio Grande Valley were used to roughly compute megafaunal kill rates in the area, and to estimate, in the most preliminary way, the portion of the subsistence base accounted for by megafauna. Even using the most generous estimates, the conclusion was inescapable that megafauna could account for only a small fraction of the total diet.

Viewed from another perspective, extreme dependence on megafauna would have been a very risky strategy. In a subsistence economy, major reliance on a single resource is always risky, since depletion of that resource is a constant threat. There is no reason to suspect that the PaleoIndian subsistence strategy was so irrational.

That megafauna would have been attractive to early hunters is indisputable. The large size of these animals would have provided substantial amounts of food with comparatively little effort. To achieve a "harvest" of smaller animals or vegetal foods of equal caloric yield would have required far greater effort. Yet this fact alone does not lend credibility to the notion of a focal economy.

As Judge (1973) has pointed out, depletion of game herds in this region would have been a recurrent problem. This depletion could result from either hunting pressure or from climatic

stress. Irwin-Williams (1977, n.d. and; Irwin-Williams and Haynes 1970) sees the response to such depletion as the actual withdrawal of hunting populations to the Plains, with return to the western area during more favorable periods. Yet there are problems with this interpretation.

During periods of climatic stress, movement of western New Mexico PaleoIndian hunters to the Plains might have resulted in encroachment on resident populations facing their own resource shortages. It is to be expected that these encroachments would have been resisted. If such encroachment did not precipitate or aggravate a local food crisis, then the megafaunal resources of the Plains must have been of such magnitude that expansion to the west, during periods of climatic amelioration, would have been unnecessary. Thus, fluctuations in the supply of megafauna in western New Mexico logically cannot explain the occupation and abandonment sequence that Irwin-Williams postulates.

It is more likely that PaleoIndian populations in western New Mexico were permanently resident, and pursued a mixed subsistence strategy which included both smaller fauna and vegetal foods. During periods of megafaunal depletion, and indeed at all times, such resources formed the major portion of the subsistence base. Depletion of megafauna would thus have amounted to little more than the loss of an occasional, minor resource.

We are led to ask, then, why hasn't evidence of a more diversified subsistence base been found? Actually, it is possible that evidence for this has been found, but not recognized. Not all PaleoIndian subsistence activities need have resulted in the deposition of diagnostic implements. If PaleoIndian projectile points were specialized tools, linked to exploitation of large game, then those points may not have been used in other portions of the subsistence round. Indeed, other subsistence activities may have required no tools which survive the passage of time.

Two impressions would result from this in the archeological record: first, that PaleoIndians did not practice a diversified economy, and second, that the area was uninhabited during periods of megafaunal depletion. We must constantly keep in mind the limitations imposed on PaleoIndian research by currently recognized diagnostic tools. It is no more than an accident

of history that the only PaleoIndian activities we can consistently recognize in the archeological record are those related to hunting.

Clearly, one of the most pressing needs in PaleoIndian research is a means to identify sites which were not used for megafaunal exploitation. Cordell has suggested the use of obsidian hydration dating, and identification of diagnostic reduction processes, for dating PaleoIndian remains (1979:21).

Judge (1973) has convincingly demonstrated that the PaleoIndian sites in his survey area were related to megafaunal exploitation. It is likely that many of the PaleoIndian sites in other large, plains-like areas, such as the Estancia Basin and the Jornada del Muerto, served similar functions, for these are the kinds of areas likely to have sustained herds of grazing herbivores. Thus, as I proposed in an earlier discussion of this topic (Tainter and Gillio 1980:40), the areas to look for other kinds of PaleoIndian settlements would be the higher terrain surrounding such plains-like areas. Sandia Cave is, of course, located in such terrain.

In the summer of 1980 the Cibola National Forest conducted an archeological survey in the northeastern Manzano Mountains, on the western edge of the Estancia Basin, and found evidence which fits this prediction. PaleoIndian remains reflecting Clovis, Plainview, and Cody occupations were found at an elevation of around 7,400 feet (Garber 1982). The vegetation in the area today is mixed conifer. At the end of the Pleistocene it is likely that the Canadian life zone would have been at this elevation, comprising a forest of spruce, fir, and aspen. With the pattern of desiccation after the Pleistocene, vegetation zones would have gradually migrated upslope. Whatever the precise vegetative characteristics may have been in Sandia times, these remains suggest some diversity in PaleoIndian subsistence.

## ARCHAIC

### Transition to Archaic

The nature of the transition from PaleoIndian to Archaic remains uncertain. It has been commonly suggested that the Archaic period represents a readaptation to drier climatic conditions, with the kinds of megafauna utilized by PaleoIndians

no longer available. The Archaic economy is thought, then, to have been more diversified and generalized than the PaleoIndian one. But, as pointed out earlier, the degree of diversity in PaleoIndian economies remains to be determined.

Cynthia Irwin-Williams (n.d.) has suggested that after the disappearance of the Cody complex, there was no further occupation of the Southwest by Plains-based hunting-oriented groups. She sees no evidence for any direct connection between terminal PaleoIndian and early Archaic populations, nor for the derivation of the later from the former.

In the Arroyo Cuervo region, Irwin-Williams notes that the early Archaic Jay phase (5500-4800 B.C.) differs so greatly in tool kit, settlement patterns, and other elements from the preceding Cody complex that there appears to be no connection between them. Instead, she sees similarities with the contemporary or immediately antecedent San Dieguito/Lake Mojave remains in California and western Arizona. This leads Irwin-Williams to postulate slow demographic movements from the west into New Mexico. In this manner, new populations occupied the territory left empty by the withdrawal of the PaleoIndian groups.

In making her argument, Irwin-Williams assumes, among other things, that western New Mexico was indeed occupied by Plains-based PaleoIndian hunting groups, that lithic tools may serve as indicators of socio-ethnic differentiation, that abrupt changes in lithic assemblages, settlement patterns and the like reflect population replacement, and that hunting and gathering populations do not make rapid, pronounced changes. Although each of these assumptions could easily command a thesis-length discussion, we have already seen that there are substantial reasons for doubting the extent to which PaleoIndian groups were focused on big game. We can also question whether the postulated population movements between the plains and western New Mexico did, in fact, occur.

The subject of PaleoIndian subsistence is crucial to Irwin-Williams' opinions about population replacement at the PaleoIndian/Archaic interface. If PaleoIndian subsistence activities, other than the hunting of big game, did not result in the deposition of diagnostic PaleoIndian points, then the area might give the archeological appearance of desertion during

periods of megafaunal depletion. Furthermore, the dating of J points, whether they were strictly Archaic or were used during the PaleoIndian period as well, is obviously pertinent to this problem.

Lyons has suggested that the PaleoIndian diet was diversified, so that with the depletion of megafauna no major subsistence change was called for, only a minor adjustment in proportions of diet items (1969:172). This is an interpretation with which I am in complete agreement. I find this a more plausible view of PaleoIndian subsistence than the notion that early populations wandered back and forth, between western and eastern New Mexico, on a chimerical quest for disappearing herds of big game, while ignoring the elk, deer, antelope, rabbits, birds, fish, roots, tubers, seeds, and pinyon nuts that virtually fell at their feet.

#### The Estancia Basin

Sites of the western Archaic, often referred to as the Desert Culture, are well represented in the Estancia Basin (Lyons 1969:62-68). They are found throughout the entire basin, occurring on all sides of the former lake and on the lake floor itself. Lyons identifies Desert Culture sites on the basis of one-hand manos, thin grinding stones, and Archaic points.

Dating of the Desert Culture complexes in the Estancia Basin has suggested intriguing possibilities. Archeological debris from the floor of Lake Estancia establishes use of the area at least around 4000 B.P. But more interestingly, Lyons notes Desert Culture lithic artifacts from the Pinos Mountain dunes and correlative dunes in the southern part of the Basin which might date geomorphologically to around 10,000 B.P. (1969:172). This would place the early Desert Culture complexes in the area coeval with the PaleoIndian occupation. At Tom Pound Ranch No. 1, Archaic artifacts were found made of the types of lithic raw materials most often used by PaleoIndians (Lyons 1969:66-67).

Of course, it is entirely possible that this geomorphological dating is spurious. However, the co-occurrence in other parts of the Southwest of PaleoIndian and Archaic remains has been known for some time (Martin and Plog 1973:65), and so the possibility that this occurred in the Estancia Basin is not to be dismissed lightly.

The question of the dating of J points is obviously pertinent, and deserves reiteration here. While Irwin-Williams (1973) dates them exclusively to the early Archaic, others believe that they originated in the PaleoIndian era (Lyons 1969:68). Honea (1969) has pointed out the morphological similarities between Jay and several PaleoIndian point types, most especially Agate Basin, Hell Gap, and Angostura. Similar observations are expressed by William Roosa (1968:69-71). We must keep in mind, though, that similarity of Archaic Jay points to established PaleoIndian forms does not necessarily indicate technological continuity, since this is a simple point form (Fig. 1) which would require no genius to have been developed independently several times.

Lyons notes little variation in the assemblages of artifacts found in most Desert Culture sites in his area, and infers that the complex underwent little or no significant change over time. He concludes that the Desert Culture represents the most successful adaptation, in terms of longevity, of any of the Estancia Basin complexes (Lyons 1969:172-173).

Lyons addresses the pertinent question: if Desert Culture and PaleoIndian complexes coexisted in the area, what was the relationship between them? The Desert Culture, with its emphasis on plant food processing, could be a seasonal manifestation of PaleoIndian occupation, or a distinct adaptation of a separate population, or a combination of both (1969:174).

Noting the technological uniformity in Desert Culture materials through time, and the comparative diversity in PaleoIndian assemblages, Lyons concludes that this represents evidence of two distinct cultural adaptations, not of activity diversity within a cultural group (1969:174). He reinforces this conclusion by the observation that no sites have been found where there was a direct association between Desert Culture and PaleoIndian artifacts (1969:175). He thus concludes that the Desert Culture and PaleoIndian complexes in the Estancia Basin represent separate cultural groups. Lyons does not acknowledge the alternative possibility, though it should be mentioned, that lack of association between Desert Culture and PaleoIndian complexes may erode confidence in his interpretation that the two were contemporaneous.

The evidence on which Lyons bases his conclusion



of cultural diversity may not, in fact, be quite so supportive. Lyons does admit that his inferences rest on tenuous ground (1969:175). From the contrast between stability in Desert Culture complexes and change in PaleoIndian remains, it does not necessarily follow that two cultural traditions are represented. It is equally plausible to suggest that, if these complexes represent seasonal activity variations, the activities carried out with Desert Culture tools, plant food processing, remained steady, while the hunting activities requiring PaleoIndian tools changed.

I argued previously that PaleoIndian points may have been specialized tools, used for exploiting megafauna, and that this was a rare activity, contributing little to the overall subsistence base. In a portion of the technological repertoire used infrequently, maintenance of stylistic continuity might have been difficult and temporal change hence more frequent. In contrast, in the portion of the technology used for the everyday tasks of gathering and processing vegetal foods, and hunting and butchering small game, stylistic patterns would have been more consistent. It is in this sphere of everyday activities that Desert Culture tools might have functioned. Available evidence does not allow us to discriminate between these alternatives, but the fact that plausible alternatives to Lyons' conclusions can be formulated indicates that it is premature to accept a conclusion of cultural diversity based on the contrast between stable and variable assemblages.

The lack of association between Desert Culture and PaleoIndian assemblages is also a questionable basis for concluding that diverse cultural groups were present. For one thing, this lack of association would seem to suggest precisely the opposite: that distinct populations did not coexist in the area. If such populations did coexist, at least some minimal degree of trade and sharing would be expected, not to mention occasional or sustained imitations of behavior. Indeed, it is inconceivable that two populations could have coexisted in the area for 4000 years without displaying some tendency toward convergent behavior.

Furthermore, if these two complexes do represent different procurement systems of the same population, then lack of association between them is not surprising. To use an analogy from the

Puebloan period, one does not expect to find spindle whorls in a pinyon gathering camp, nor milling stones in a butchering locality.

Of course, the relevance of the preceding discussion depends entirely upon the interpretation of contemporaneity between Desert Culture and PaleoIndian complexes in the area. Should the Desert Culture prove to post-date the PaleoIndian occupation, as is commonly assumed in the Southwest, then these questions vanish. Thus, dating of Desert Culture complexes in the Estancia Basin should be a research goal.

Voicing some of the same observations made by Irwin-Williams (1973, n.d.), that there seems to be no similarity between terminal PaleoIndian and early Archaic complexes, Lyons (1969:218-219) proposes that the Desert Culture derived ultimately from the Lower Lithic, which is represented in his study area by the Estancia Complex. He thus characterizes the PaleoIndian tradition as an ". . . evolutionary tangent culminating in a dead end" (Lyons 1969:219). Lyons here makes the crucial assumption that the PaleoIndian phenomenon represents a distinct tradition of socio-ethnic (i.e., cultural) continuity. If, instead, PaleoIndian and Desert Culture complexes represent specialized adaptive poses, then questions of cultural continuity become less meaningful.

Roosa (1968) encountered Archaic occupations at the Lucy site. A number of J points were found, some in association with hearths. Several of these were of the narrow blade variety which he associated with the Archaic Pinto Basin points (1968:69; cf. Wormington 1957:168-169), while others were the broad blade form that resembles Agate Basin and Hell Gap points (1968:71). Complexes which he terms Pinto are found elsewhere in the Estancia Basin (1968:19), and he suggests that the manos and metates found with these are similar to the Chiricahua Cochise and Chiricahua Amargosa II layers from Ventana Cave.

In 1975, Lyons and Switzer reported on the interesting site of Tillery Springs, located about one mile south of the town of Estancia. Remains at the site included San Jose (ca. 3200-1800 B.C.) as well as late Archaic/early Basketmaker and later Puebloan materials. Most significant was a radiocarbon date obtained on mammoth bone of 2050 B.C.  $\pm$  330. Augmenting this date are radiocarbon assessments of 4050 B.C.  $\pm$  200 and 6000 B.C.  $\pm$  300 taken on two samples of

mammoth tusk at the Tom Pond No. 1 site (Lyons and Switzer 1975:318). These dates correlate well with the known recession of Lake Estancia, but do not correlate with the presumed extinction of these megafauna. Thus, Lyons and Switzer suggest that the periphery of the shrinking lake was an area where Pleistocene megafauna survived well into Holocene times (1975:318, 328). It should be kept in mind though, as Martin (1967:98) suggests, that such recent dates may be due to inorganic carbonate replacement, or humic acid contamination.

If these dates are valid, they have potentially significant implications for both PaleoIndian and Archaic subsistence. The implications for Archaic subsistence are evident: with the availability of megafauna well into the Archaic, and with the possibility that Desert Culture complexes extend as far back as 10,000 B.P., then in the Estancia Basin there may have been little difference between PaleoIndian and Archaic subsistence. It should be mentioned that megafauna would have been rare toward the end of their existence in the area, but I have argued that even in the PaleoIndian period they did not constitute a major portion of the subsistence base. The implications for PaleoIndian subsistence are more subtle: if megafauna continued to be available in this area, then it becomes less convincing to argue that the PaleoIndians withdrew from the area around 6000 B.C. for lack of big game.

#### The Riverine Area

The Archaic occupation of the riverine portion of the overview area has, until recently, been almost totally undocumented. Weber notes remains (1963:228-229) in Socorro County that he assigns to the Chiricahua and San Pedro Cochise. He observes that Archaic populations ranged over river terraces, open plains, mountain foothills, canyons, and high ridges and saddles.

Anzalone (1973) has described remains from rockshelters in San Lorenzo Arroyo, north of Socorro, that seem to date to the late Archaic/early Basketmaker periods. Since the major occupation at these sites appears to have been during the Basketmaker era, they will be discussed in more detail in a subsequent section.

Significant evidence of Archaic occupation has emerged from Marshall's (1982; see also C. Gossett 1984) extensive survey of the riverine

area. Very little evidence of Archaic use of the immediate riverine area was found. A major exception, though, occurred along the northern end of the Fra Cristobal range in southern Socorro County. Here a cluster of probable Archaic sites (they exhibited no diagnostic points, but rather slab-basin metates, one-hand manos, and hearths) was found along the river margin in dunes and sandy areas. Marshall (1982) relates this concentration to the presence of Chihuahuan Desert flora and the resource diversity of the adjacent Fra Cristobal range. Other Archaic manifestations were found near Fort Craig, Elmendorf, and San Acacia. Sites of possible antiquity have been located east of the river on the Los Pinos slopes.

#### Adjacent Areas

To the west of the riverine portion of the study area, in the San Augustine Basin, lies Bat Cave (Dick 1965). This well known Archaic site has yielded the earliest maize in the Southwest, dating to between 4000 and 2000 B.C. In this area, there may have been a pattern of seasonal transhumance between the San Augustine Basin and upland localities in the surrounding mountain ranges (Berman 1979:19, 21-22).

The major research in the Archaic phenomenon in northern New Mexico has been conducted by Cynthia Irwin-Williams in the Arroyo Cuervo region. The Arroyo Cuervo is a tributary of the upper Rio Puerco, located to the northwest of the overview area across the Rio Grande. Irwin-Williams (1973) has sketched a cultural/temporal sequence, termed the Oshara Tradition, for this area that may be of relevance to at least parts of the central New Mexico overview area.

Irwin-Williams (1973) notes a continual pattern of population growth throughout the Archaic in the Arroyo Cuervo region. This spurred repeated cultural changes which may be outlined as follows:

Jay Phase (5500-4800 B.C.). Most sites of this phase are located in sheet sand deposits on cliff tops in canyon heads. These sites are located in proximity to several resource zones, and contain evidence of the full range of seasonal activities. Specialized sites have been found at other locations. The Jay phase was characterized by a mixed-spectrum subsistence pattern which featured year-round exploitation of resources accessible from permanent water sources

(Irwin-Williams 1973:4-5).

Bajada Phase (4800-3200 B.C.). The settlement pattern of the Bajada phase was similar to that of Jay. Despite decreased moisture conditions, there appears to have been a slight increase in population, and archeological sites are more numerous (Irwin-Williams 1973:6-7).

San Jose Phase (3200-1800 B.C.). The San Jose phase witnessed considerably increased effective moisture. The number and reliability of springs increased, and the floral and faunal resource base improved. There is a noticeable increase in the number and size of sites, particularly in the canyon head area. Specialized sites were maintained. Base camp debris becomes more concentrated and extensive. Post hole patterns suggest temporary structures.

Important additions to the tool kit in this phase were shallow-basin grinding slabs, and simple cobble manos (Irwin-Williams 1973:7-9). These imply expansion of the subsistence system to include increased emphasis on seeds and nuts. I have suggested elsewhere (Tainter and Gillio 1980:44) that this shift was probably the outcome of the pattern of continual population growth in the Archaic of this area.

It is during the third millennium B.C. that the Southwest first becomes recognizable as a cultural entity. This entity has been termed the Pecos complex (Irwin-Williams 1967), from the major archeological units which comprise it: Pinto Basin, Cochise, and San Jose. Irwin-Williams (n.d.) suggests that this phenomenon reflects the development of a large-scale, low-level communication network.

Armijo Phase (1800-800 B.C.). The Armijo phase witnessed significant changes in patterns of land use, technology, and seasonal structure. Moisture fluctuated throughout the period, but was generally lower than before. For the first time, limited quantities of maize were grown in the narrow flood plains near canyon head springs. This at first provided only a small increment to the diet.

In most cases the Armijo phase settlement pattern was a continuation of that of previous phases. There was, however, a new settlement type, the first example of seasonal population aggregation. It is best represented at Armijo Shelter, a rockshelter located at a canyon head

near the best spring. Paleobotanical and hydrological studies indicate a fall or fall/winter occupation. Items reflecting ritual activities were included in the tool kit. Such items are found only at Armijo Shelter.

Groups of 30-50 individuals, from several social groups, would probably gather at this location in the autumn to participate in their larger-scale social and ceremonial activities. When these were concluded, the populations would disperse to the smaller cliff-top sites (Irwin-Williams 1973:9-11). It has been suggested that the increased social and ritual complexity displayed at Armijo Shelter reflects population aggregation and resource distribution, the purpose of which was to even out variations in harvests enjoyed by individual groups (Tainter and Gillio 1980:45).

En Medio Phase (800 B.C.-400 A.D.)/Trujillo Phase (400-600 A.D.). The En Medio phase represents the first archeological materials in the Arroyo Cuervo region that are recognizable as Anasazi-Pueblo. It is essentially equivalent to developments termed Basketmaker II elsewhere in the Anasazi area. The Trujillo phase is the equivalent of early Basketmaker III.

A regional population increase is evident during these phases, reaching a peak in the first few centuries A.D. A strong pattern of seasonal transhumance developed, with populations traveling farther from base camps to obtain resources. In addition, there was some degree of resettlement on the Albuquerque West Mesa (Reinhart 1967), a locality that is now bleak, waterless, and decidedly marginal. Later, populations on the West Mesa shifted toward the Corrales Valley and practiced an agricultural subsistence base (Frisbie 1967), while corresponding populations in the Arroyo Cuervo region shifted toward wider valley bottoms that were suitable for agriculture. Two major developments during the Trujillo phase were pottery and the bow and arrow (Irwin-Williams 1973:11-16).

The consequences of population growth throughout the Archaic can be clearly seen in this sequence. By the Armijo phase population had grown to the point where maize had become important as a stored winter food. At this point the importance of evening out variations in harvest experienced by individual groups led to fall/winter population aggregations, ritual resource distributions, and increased social



complexity. Yet maize remained only a fraction of the diet. When continued population increases required yet further readaptation, the preferred options were expansion of the settlement system and use of marginal environments. Major reliance on agriculture came only when population had grown to the point that even these strategies were insufficient. The resulting agricultural strategies left the archeological record recognizable as the Basketmaker III period (Tainter and Gillio 1980:48, 99).

The Archaic sequence Irwin-Williams has delineated in the Arroyo Cuervo region may be found to apply (in whole or in part) to the Estancia Basin. Jay points are, as noted, regularly reported from this area. Lyons (1969:222) illustrates a point that appears to fall into the Bajada category. A similar point has been found in the adjacent Manzano Mountains (Garber 1982). San Jose remains were found at Tillery Springs (Lyons and Switzer 1975). Laumbach (n.d.) notes that Oshara Tradition point types have been found in the Cimarron area and near Wagon Mound, in northeastern New Mexico, and may indeed have extended all along the eastern border of the mountains in the northern half of the state. He suggests that Plains Archaic populations occupied the area to the east of the front range zone.

Oshara Tradition points are not the only variety found in the area, however. Points similar to southern forms, known as Cochise, have also been documented in the Estancia Basin (Lyons 1969). Immediately to the north, in the Galisteo Basin, Lang (1977) found that Oshara points had been used during the early Archaic, until perhaps 1500-1000 B.C., at which time Cochise points came to be used. He suggests actual population replacement, with a northward movement of Chochoise populations into the area (Lang 1977:17).

Lang's discussion poses intriguing questions, but he has only touched upon an enormously complex problem. Lang assumes that projectile point forms served to symbolically designate socio-ethnic groups, a point worthy of more extended discussion. This issue will be addressed in more detail in the following chapter.

#### EARLY AGRICULTURAL POPULATIONS

The central New Mexico overview area is one of

the least studied parts of the state in terms of early agricultural and pithouse-building populations. Those few investigations which do pertain to this era have been largely fortuitous, concentrating on pithouse sites because they were endangered by one cause or another. Actual problem-oriented research in this period has been minimal. Anzalone's (1973) study in San Lorenzo Canyon is a notable exception.

#### The Riverine Area

San Lorenzo Arroyo is located on the west bank of the Rio Grande about ten miles north of Socorro. A major archeological site in this drainage is Lemitar Shelter, a rockshelter discovered and tested by C. Vance Haynes and G. C. Shelton in 1952, and more completely excavated by William Weinrod in 1953. Investigation of the site was started again by Ronald Anzalone, whose objective was to study the late Archaic occupation of this region (Anzalone 1973). Lemitar Shelter, and associated nearby sites, are particularly important since they seem to date to the period when middle Rio Grande Valley populations were experiencing a shift of subsistence in the direction of major reliance on agriculture (Irwin-Williams 1973:15-16; Tainter and Gillio 1980:99).

In conducting a survey of the canyon under the sponsorship of Cynthia Irwin-Williams, Anzalone recorded four major occupation sites. These included Lemitar Shelter (ENM 3501), Polvadera Shelter (ENM 3502), Hacienda Terrace (ENM 3503), and Hackberry Shelter (ENM 3504). This last site was excavated by Robert Weber, but no report of his investigations is yet available. Indeed, Anzalone's (1973) M.A. thesis is the only documentation available for the locality, and serves as the basis for the synopsis to follow.

Archeological features in Lemitar Shelter included hearths and cooking pits, storage pits, matting, and bedding (concentrations of shredded and matted juniper bark and grass). Ceramics found in the deposit included 1 sherd of San Marcial B/w, 3 of Casa Colorada B/w, 3 of San Lorenzo R/b, 8 of an unnamed gray neck-corrugated ware, 28 of Lino Gray, 14 of plain brown ware, and 8 of an unnamed plain gray ware. A diversity of time periods are represented here, ranging from Basketmaker III to Pueblo III (Anzalone 1973:102).

The site contained a variety of artifact forms,

seeming to indicate a habitation locus. Anzalone sees the ground stone as being of Archaic types, including irregular, slightly modified hand-stones, and both shallow basin and slab varieties of milling stones. Different portions of projectile points, including tips, bases, and complete specimens, were "equally prevalent" throughout the shelter, and in all excavation levels. Anzalone analyzed stone tools in terms of Wilsen's (1970) three edge angle categories: 26-35 degree (cutting); 46-55 degree (skinning, hide scraping, sinew and plant fiber shredding, heavy cutting of wood, bone or horn, and tool-back blunting); 66-75 degrees (wood working, bone working, heavy shredding, skin softening). He found approximately equal numbers in each category, and concluded that the shelter was a multi-purpose site (Anzalone 1973:101).

A surface collection was made at Polvadera Shelter. The materials present were similar to those found at Lemitar Shelter, including the same variety of lithic materials and artifacts. An analysis of edge angles revealed a preponderance of low edge angle tools (Anzalone 1973:109).

The Hacienda Terrace is an open air site. In surface collections it yielded a single projectile point which Anzalone notes is similar to those from Woodchuck Cave, a Basketmaker II site in northeast Arizona. The remainder of the archeological materials were similar to those already noted at Lemitar and Polvadera Shelter, with a predominance of low edge angles on stone tools (Anzalone 1973:113).

Hackberry Shelter was excavated by Robert Weber, but results of this work are included in Anzalone's (1973:124) thesis. The ceramics from the site, as identified by Weber, include 33 pieces of plain brown ware (said to be of a generalized El Paso Brown character), 15 of Lino Gray, 7 of an unnamed gray ware, 2 of an unidentified carbon paint B/g, 2 of an unidentified non-local glaze B/g, 1 of Elmendorf B/w, 1 of an unidentified B/w, and 1 Rio Grande glaze B/r.

Projectile points recovered at the Hackberry site date relatively late compared to Cochise forms, but some types are large and reminiscent of San Pedro Cochise points. Other points were generally similar to early Mogollon and Basketmaker forms.

A variety of non-domesticated floral resources were recovered at Lemitar and Hackberry Shelters. These are shown below in Table 4. Domesticates included maize and squash (or gourd) in both sites. David Brugge tentatively classified the latter as Cucurbita pepo, Cucurbita moschata, and Lagenaria sp. In analyzing the maize remains, Brugge found an increase in both cob and kernal size from middle to late times. He postulated the arrival of Guatemalan Big Grain maize at Lemitar Shelter by 700 A.D., and grouped the maize within Basketmaker-like types. At Lemitar Shelter a cache of 65 kidney beans (Phaseolus vulgaris) was found in a leather bag in an upper level. No formal analysis of faunal remains was undertaken, but several rodent and deer parts were noted (Anzalone 1973:126-127).

Anzalone compares the projectile points recovered from San Lorenzo Arroyo to equivalent forms elsewhere in the Southwest. Among the comparable point forms Anzalone notes are those of the:

- Pine Line phase (150 B.C.-500 A.D.), western New Mexico;
- Hilltop and Cottonwood phases (A.D. 200-600), Forestdale Valley, Arizona;
- Pre-pottery through San Francisco phase levels at Tularosa Cave (300 B.C.-900 A.D.);
- Proto-Basketmaker from En Medio Rockshelter in the Rio Puerco area;
- Penasco phase (250 B.C.-100 A.D.) in San Simon Valley, Arizona;
- San Pedro Cochise pre-pottery to Mogollon 2 (or later) layers at Bat Cave and Forestdale Valley sites (?-600 A.D.).

Anzalone concludes that the sites would date in the interval between late Archaic and Basketmaker III, about 500 B.C. to 700 A.D., and would correspond to San Pedro Cochise in southwestern New Mexico (1973:130-131). The few later ceramics presumably indicate brief Puebloan use of the locality.

Anzalone characterizes the subsistence adaptation of the San Lorenzo Canyon inhabitants as a mixed hunting-gathering/ agricultural strategy. The presence of cultigens and pottery at the sites indicate an important period of cultural change, a period of perennial concern to Southwestern archeologists. During this crucial episode, San Lorenzo Arroyo inhabitants occupied these rockshelters as year-round base camps from which foraging and crop tending activities took place.

Rope snares found in the cave deposits indicate trapping of small game. Dart and arrow-sized projectile points were present, as were "bunt" points for stunning or killing game without tearing the flesh. Reed and wood fragments of composite arrows were found, some perhaps large enough to have served as spear shafts. Metates were all of the slab or shallow basin types.

A large number of hearths and cooking pits were found at Lemitar Shelter. Two pits lined with slabs, bark, and grass were also uncovered, one of which was filled with Yucca seeds. Anzalone (1973:136) notes that these pits appeared similar to Basketmaker II storage cists, and to features found in Cosgrove's (1947) Hueco Basketmaker caves to the south and southwest. The basketry recovered was also similar to these southern caves (1973:137).

Anzalone discusses factors involved in the selection of settlement locations. He suggests

that both water and lithic raw materials would have taken more procurement time than floral and faunal resources. There are nine known springs within two miles of these sites. The chipped stone artifacts were all made of local materials, except for some items made of obsidian, but even this material could be obtained as cobbles from the Rio Grande, about six miles away. The placement of sites, however, may not have been freely chosen, but instead dictated by the availability of rockshelters. Anzalone concludes that the availability of shelter and plant resources were the main reasons for choosing site locations. The Hacienda Terrace site, though, was an exception. This was an open air site, and Anzalone suggests that water and lithic resources may have been among the most important factors in choosing this spot for occupation (1973:20, 139-140).

The botanical data from these sites indicate that mesquite was the most important plant resource.

Table 4

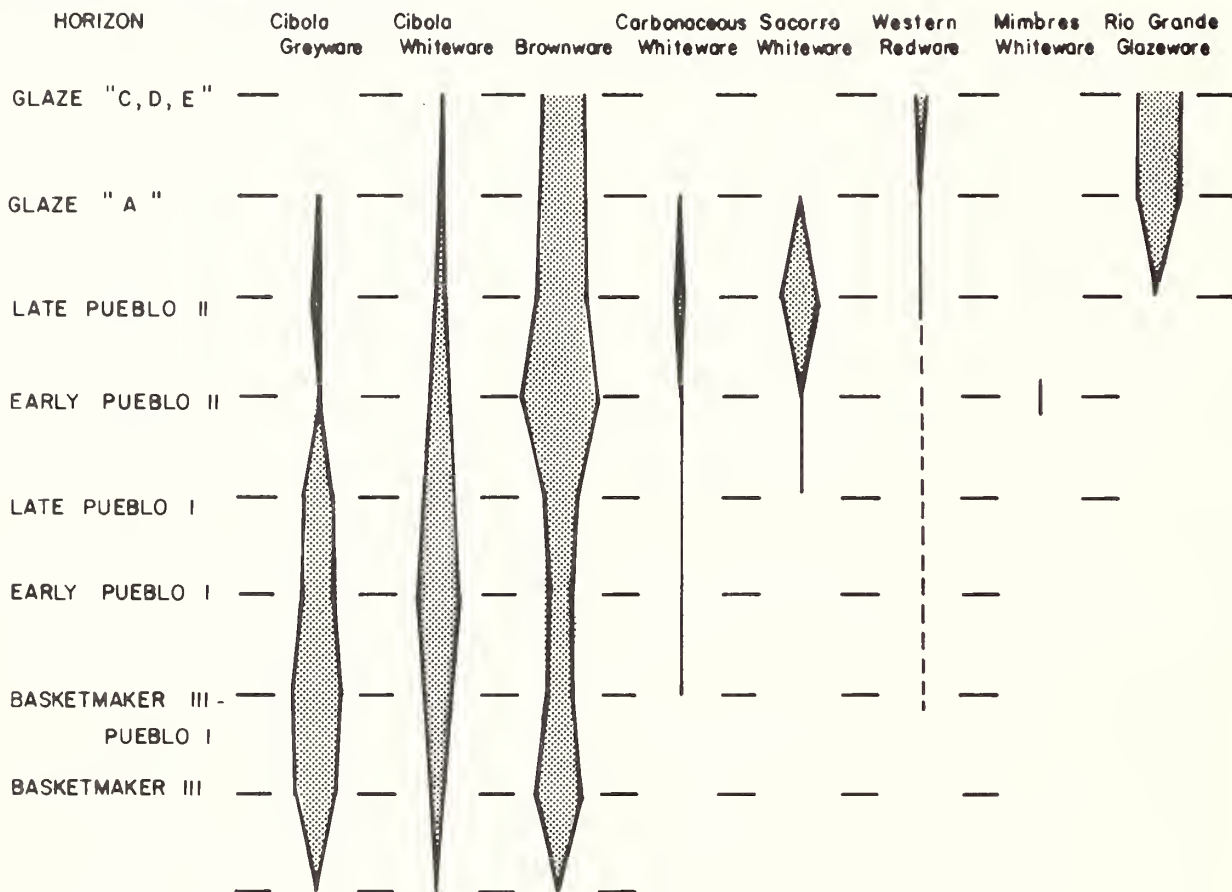
Non-domesticated Floral Materials in  
Lemitar and Hackberry Shelters<sup>1</sup>

| Species                                                      | Part Recovered         |
|--------------------------------------------------------------|------------------------|
| <b>Lemitar Shelter</b>                                       |                        |
| <u>Celtis reticulata</u> (hackberry)                         | seeds                  |
| <u>Pinus edulis</u> (pinyon)                                 | wood(*), nuts          |
| <u>Yucca</u> sp. (yucca)                                     | pods(*), seeds, leaves |
| <u>Opuntia</u> sp. (pickly pear)                             | pods(*), leaves        |
| <u>Prosopis juliflora</u> (mesquite)                         | wood, seeds, pods      |
| <u>Helianthus</u> sp. (sunflower)                            | seed heads             |
| <u>Phragmites communis</u> (reed)                            | stalk                  |
| <u>Quercus</u> sp. (oak)                                     | leaves, acorns         |
| <u>Juniperus</u> sp. (juniper)                               | seeds(*), wood, bark   |
| <u>Nolina</u> sp. (beargrass)                                | leaves                 |
| <u>Apocynum</u> sp. (hemp)(*)                                | fibers                 |
| <u>Asclepias</u> sp. (milkweed)(*)                           | fibers                 |
| <u>Dasyllirion</u> sp. (sotol)(*)                            |                        |
| <b>Hackberry Shelter</b>                                     |                        |
| <u>Yucca</u> sp. (yucca)                                     | seeds, leaves          |
| <u>Quercus</u> sp. (oak)                                     | acorns                 |
| <u>Prosopis juliflora</u> (mesquite)                         | seeds, pods            |
| <u>Celtis reticulata</u> (hackberry)                         | seeds                  |
| Unidentified grass grain                                     |                        |
| Horsetail or scouring rush (no species identification given) |                        |

<sup>1</sup> after Anzalone (1973:126).

(\*) identification only by Weinrod (1953)

# RIO SALADO



# LOWER RIO PUERCO

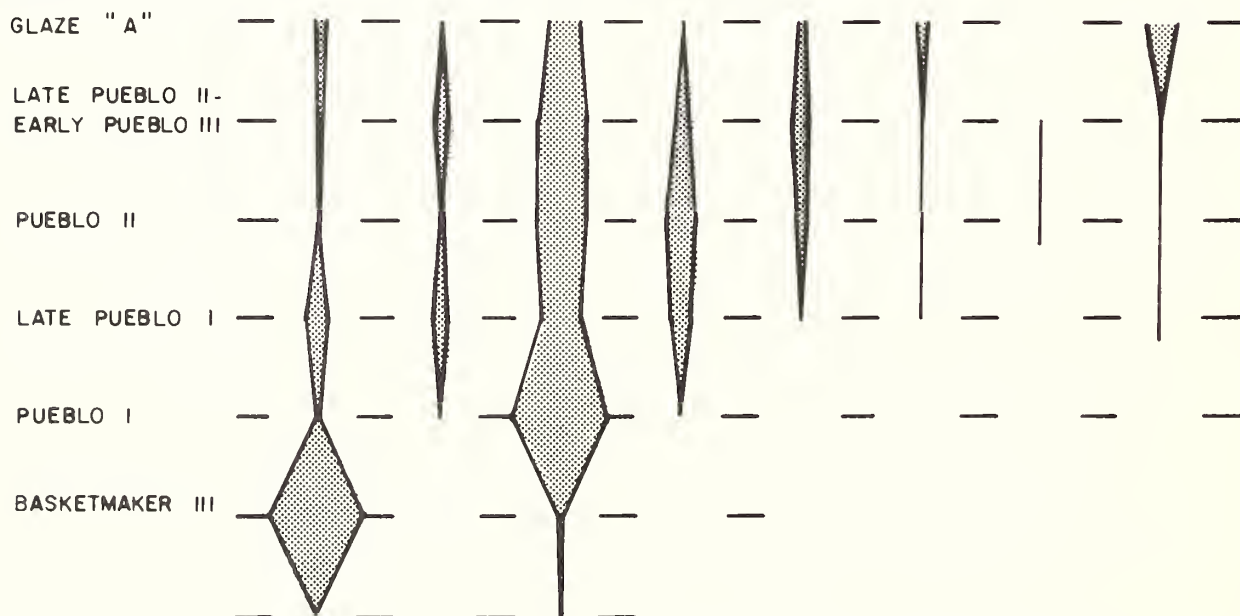


Figure 3. Ceramic ware frequencies of the Rio Salado and Lower Rio Puerco Areas (after Marshall 1980:187). Reproduced by permission of Human Systems Research.



followed by yucca, possibly hackberry, prickly pear, oak, and pinyon. Mesquite is available for human consumption from late June to late August/early September. Hackberry ripens during the same interval. Acorns and pinyon nuts would have been available in the fall, while cactus fruits and seeds could have been collected in the spring. No evidence for these last was found, however. Coupling the availability of plant foods with the diversity of artifacts and features, Anzalone suggests the possibility that these sites were occupied as permanent, year-round base camps. He believes these populations were organized as bands, that is, small, independent, egalitarian groups (Anzalone 1973:140-141).

A rockshelter which may contain deposits dating to the same period as the San Lorenzo sites is Sandal Cave, first recorded by M. R. Harrington (1928). It is located in a canyon 22 miles south of San Marcial. The cave contained pictographs, perishables (including sandals), and both black-on-white and red-on-black pottery. A preceramic stratum lay underneath the levels bearing pottery. Cosgrove (1947) included the area of Sandal Cave in his "Hueco Basketmaker" formulation, a term which he applies to archeological remains showing a variety of common characteristics in the upper Gila and Hueco areas of southwestern New Mexico and adjacent parts of Texas and Mexico.

In a recent archeological survey of the lower Rio Puerco and Rio Salado drainages, just outside the northwest corner of the overview area, some Basketmaker sites were found displaying pithouses, jacal structures, pueblitos, possible tipi rings, and debris scatters (Wimberly and Eidenbach 1980:89). These finds suggest a greater range of architectural variation than previously had been thought to characterize the period. Marshall (1980) has classified the ceramics found during the course of the survey. The results of his analysis are shown in Fig. 3. Most interesting in the Basketmaker III period is the clear dominance of gray wares over brown wares in the lower Rio Puerco sites, contrasted against their more balanced representation along the Rio Salado.

East of the riverine area, in the northern Jornada del Muerto, a set of five pithouses was located by Agogino and Weber (1970) at the Mockingbird Gap site. One of these was excavated, but no report on it has been issued.

Marshall has developed a cultural/temporal synthesis for the Socorro area which attempts to correlate known Socorro area remains with the Jornada Mogollon sequence established by Lehmer (1948). Marshall (1973:50) proposes the correlation shown below.

Table 5

Marshall's Correlation of Archeological Phases  
in Socorro and Jornada Mogollon Areas

| Socorro       | Temporal Range | Jornada Mogollon |
|---------------|----------------|------------------|
| San Marcial   | 800-1100 A.D.  | Mesilla          |
| Early Socorro | 1100-1200 A.D. | Dona Ana         |
| Late Socorro  | 1200-1400 A.D. | El Paso          |

Only the San Marcial phase is of interest at this point. (And in any event Marshall has since modified this scheme, as will be discussed below.) The San Marcial phase is characterized by pithouse villages with an indigenous brown ware which is probably similar to Jornada Brown. San Marcial B/w is a local version of White Mound B/w, and reflects the Anasazi ceramic tradition. Intrusive ceramics include Mogollon R/b, Alma Plain, and San Francisco Red. Marshall (1973:52) suggest that these indicate considerable contact with the western Mogollon.

The San Marcial phase is the earliest sedentary riverine occupation in the overview area. As part of his recent survey, Marshall (1982; Marshall and Walt 1984) delineated a concentration of Basketmaker III sites (San Marcial phase) in the Fra Cristobal area where a cluster of Archaic sites had also been found, and postulated in situ evolution from this Archaic base. These settlements tended to be small, averaging 4.1 non-contiguous house units per site, with a range from one to eight. Marshall and Walt (1984:35) suggest that the San Marcial sites were each occupied by a single lineage. The architecture of these sites patterns distinctively. Pit structures have been found only west of the river, masonry-based jacals east. Marshall and Walt note that this pattern could reflect either temporal, functional, or cultural differentiation. They date the San Marcial phase at ca. 300 - 800 A.D.

There is no evidence on these sites of public architecture or intercommunity organization. Populations, which may have been smaller than the

Archaic occupation of the area, were probably seasonally mobile, using the upland resources. Marshall and Walt feel that this was especially the case early in the phase.

Plain brown wares dominate these sites, while the east bank settlements rarely produce San Marcial B/w. San Marcial is the only Basketmaker III white ware in apparent indigenous association with a Mogollon brown ware complex, and it seems to occur only in the Fra Cristobal-Black Mesa area. Early agricultural populations seem to have otherwise avoided the riverine area, settling instead in upland, lateral drainages such as San Lorenzo Arroyo (Anzalone 1973) and the Salado and Puerco drainages (Wimberly and Eidenbach 1980). In the Salado drainage, no sites that would be assigned to the San Marcial phase were found in a substantial sample of Basketmaker III sites (Marshall 1980, 1982; Marshall and Walt 1984:34-35).

#### The Upland Area

As part of the Gran Quivira Mound 7 excavation project, Thomas Caperton (1981) conducted an extensive archeological reconnaissance of the Gran Quivira area. The area of this survey included all of Chupadera Mesa from 35 degrees 15 minutes north latitude to U.S. 60 at Abo Pass, east across Jumanes Mesa, and south to the foothills of the Gallinas Mountains. The method of survey was to interview local ranchers concerning the location of sites. Since this is a highly biased method of data recovery, it is no surprise that only ceramic sites were recorded.

A very general cultural/temporal sequence was developed by Caperton for the area based on architectural manifestations. Three cultural periods for Chupadera Mesa area were delineated as shown below:

|                 |                |
|-----------------|----------------|
| Pithouse Period | 800-1200 A.D.  |
| Jacal Period    | 1175-1350 A.D. |
| Masonry Period  | 1300-1675 A.D. |

The Pithouse Period in the Gran Quivira area, the only period I will discuss here, is characterized by a predominance of brown wares. Much of the pottery (65%) is Jornada Brown, with smaller percentages of various black-on-white varieties.

In the southern part of the survey area, black-on-white types included Puerco, Socorro, Chupadero, Casa Colorado, and one sherd of

Mimbres Bold Face. San Andres Red-on-terracotta is also found in the south.

Around Jumanes Mesa in the north a variety of black-on-white types common to the southern area were found. These included Puerco, Socorro, Chupadero, and Casa Colorado. Other types of black-on-white found only in the north were Red Mesa, San Marcial, and Kiatuthlanna. The absence of San Marcial B/w from the south is surprising, and may reflect only sampling error. Other ceramics present in the north were Wingate B/r and one sherd of Lino Gray.

Caperton suggests that the trade wares found on these pithouse sites range between 800 and 1200 A.D. He notes a greater degree of outside contact on Jumanes Mesa than in the southern part of his survey area, although the possibility of sampling error should be kept in mind. The southern pithouse sites may have lacked access to reliable water sources.

Two excavated pithouse sites have been reported from the area. The earlier of these was discovered during pipeline construction, and excavated by Franklin Fenenga (1956) and Earl Green (1955). The latter worked under the auspices of the Museum of Texas Technological College. This site was located a few miles northwest of Gran Quivira National Monument. Pithouses and storage pits were found at the site.

Fenenga (1956:232) found the following ceramic assemblage in his excavations: 63.6% Jornada Brown, 6.0% Alma Plain, 0.9% mud paste ware, 0.2% Three Rivers Terracotta, 0.6% Glaze A red, 0.2% Glaze F red, 15.6% Lino Gray, 8.4% "Pink" Lino, 1.5% Lino Fugitive Red, 1.0% San Marcial B/w, and 2.3% Tabira B/w. Based upon the dominant occurrence of Jornada Brown and Alma Plain, Fenenga characterizes the occupation as Mogollon, although the Lino types indicate close contact with Anasazi populations. The Three Rivers Terracotta, the glazes, and the Tabira B/w indicate later camps at the site. The San Marcial B/w suggests contemporaneity with Basketmaker III populations in the Rio Grande Valley.

Green's (1955) analysis of the ceramics recovered from his excavations at this site indicated 127 pieces of Jornada Brown, 11 of Lino Gray or Kana-a Gray, 12 other brown wares, and 10 unidentified. He places the occupation around



600 or 700 A.D., with 900 as the latest possible date. Vivian (1964:143) prefers this later date.

A much later pithouse manifestation located at Gran Quivira was reported by Ice (1968). The ceramics associated with it suggest that, chronologically, it would fall into Caperton's Jacal period, and so it is discussed in the next section.

A recent survey of the Gran Quivira unit (Beckett 1981) revealed a substantial pithouse occupation. Gran Quivira apparently sustained a large population even before the pueblo was built.

One other site in this area displaying possibly contemporaneous pithouse and surface architecture is Taylor Draw (Peckham 1976). Since the majority of the architecture at this site seems to fall more appropriately into Caperton's (1981) Jacal Period, it will be described in the next section.

#### EARLY PUEBLOAN POPULATIONS

##### The Riverine Area

In 1973, Marshall termed the early puebloan period in the Socorro area the Early Socorro phase, and proposed that it was temporally equivalent to the enigmatic Dona Ana phase of the Jornada Mogollon area (ca 1100-1200 A.D.). As of the time of Marshall's synthesis no sites of this period had been excavated in the overview area, and to my knowledge, none have been as of this writing.

During this period, the use of indigenous brown wares continued, but not San Marcial white wares. The ceramic assemblage indicates continued association with Anasazi and western Mogollon populations. Oval to rectangular surface rooms, probably in association with pit rooms, have been noted. Later in the period Socorro white wares appear. Like the preceding San Marcial white wares, these represent a southeastern variety of Chaco white wares.

Mera (1935, 1943) sees no connection between San Marcial B/w and Socorro B/w. He suggests that the latter is most closely linked to his Chaco 2 variety (Mera 1935:27). Socorro B/w forms a complex with Pitoche Rubbed-ribbed and Los Lunas Smudged (Mera 1943:11). Mera views this last as a version of the southern brown wares (1935:28).

Based upon the results of his recent survey, Marshall (1982; Marshall and Walt 1984) has revised his earlier chronology, terming the Pueblo I period the Tajo phase. He dates its inception to around 800 A.D., and its termination to around 950 to 1000. At the beginning of this period there was considerable colonization of the riverine area. Marshall notes that this colonization corresponds with a more general trend toward the population of lowland areas, and with Stuart and Gauthier's (1981:411) "Basin Classic Era." He suggests that it may have resulted from population pressure and/or habitat deterioration in the uplands, or from development of water control technology (Marshall 1982).

In the riverine area, the first substantial Pueblo I occupation appears in the north, near the Rio Salado confluence, while use of the San Marcial area was limited. Tajo phase settlements tend to cluster on the eastern benches in the La Joya and San Acacia areas, but are occasionally found south to Carthage Arroyo. The concentration near the Salado confluence is of interest since it is related at least geographically to the earlier and contemporary populations farther up the drainage.

Tajo phase sites are small hamlets of one to ten surface rooms, with occasional pit structures. Most are single tier, linear rows of cobble-based jacal, but some masonry-based jacal and full height masonry structures are also present. There is an average of about five rooms per site, and two rooms per room block. Sites are located consistently on gravel bench margins in the riverine area. No Great Kivas have been observed, but there is one elevated enclosure that is possibly defensive or ceremonial in nature. Population of the riverine area is estimated by Marshall and Walt at 500 to 1000 persons.

Marshall concludes that there was no native white ware industry at this time. Tajo ceramics are mainly Mogollon-affiliated Pitoche brown wares with intrusive Cibola white wares. Red Mesa B/w is common. Occurring in lesser quantities are Cibola gray ware, Mimbres white ware, and Elmdorf white ware.

The Cibolan wares present are of the classic Plateau variety. Early Tajo sites display only the Red Mesa styles. Later, the Gallup and Puerco-Escavada styles are also present. Lino

Gray and Kana'a Neckbanded represent the Cibolan gray wares. Early in the phase there is more of this gray ware up the Rio Salado compared with the Rio Grande, but less difference between these areas in the later Tajo phase. Marshall infers from this trend the early co-residence of Anasazi and Mogollon populations in the area, with later Anasazi withdrawal (Marshall and Walt 1984:47-49).

Marshall terms the local Pueblo II period the Early Elmendorf phase. He places its inception around 950 - 1000 A.D., and its end about 1100 (1982; Marshall and Walt 1984). During this period, Marshall notes, the differentiation of the Socorro (western plateau margin), Elmendorf (riverine, evolving from the Tajo phase), and Cedarvale (eastern margin) ceramic traditions apparently took place.

As with all prehistoric occupations of the area, there was a decided preference for the east river margin. Early Elmendorf sites are distributed from the lower Rio Puerco south to Bosque del Apache. Settlement extended into areas that were relatively unused in Tajo times. Structural sites tend to be found on riverine gravel benches, non-structural ones on sandy benches or riverbank locations. Pueblos are similar in construction to those of the Tajo phase, but evidence increased aggregation. There are several village concentrations. Marshall and Walt discern two size ranges: small sites with one to nine rooms and a mean of 4.5, and large sites with 31 to 67 rooms and a mean of 54. Only 9 of 70 room blocks have 10 or more rooms. Small room blocks range from one to six rooms, with a mean of 2.2. Large room blocks range from 1 to 20 rooms with a mean of 4.5. Linear room blocks, like those of the Tajo phase, are still present, but L-, U-, and F-shaped structures also occur. Pit structures are common.

The formation of larger, aggregated villages of 50 to 100 persons suggests to Marshall and Walt a major change in social organization. They postulate increased social, economic, and ritual organization among the Early Elmendorf population.

The Early Elmendorf phase is characterized by a local white ware industry including Casa Colorado, carbonaceous white ware, and Southern Kwahe'e. Although traditionally linked to Chupadero white ware, this is more likely, Marshall and Walt argue, a local development.

The Pitoche brown ware of this phase is similar to Tajo. Intrusives include Chupadero B/w, Cibola white ware, traces of Mimbres, and some Cibola gray wares (Marshall and Walt 1984:75-78).

In Los Alamos and Palo Duro Canyons, between the Rio Grande and the Los Pinos Mountains, a number of Pueblo I and II farming sites have been located. Those in Los Alamos Canyon were discovered by Shiner and Lark (1954) during a pipeline survey. They suggested that several of these sites, which yielded Red Mesa B/w, date in the interval 950-1050 A.D. (Shiner and Lark 1954:14). One of these, when excavated, was found to contain rectangular rooms outlined by upright stone slabs, indicating jacal construction. Shiner and Lark (1954:15) propose that the sites were seasonal farmhouses. In a recent visit, Laumbach (1980) generally concurred with the dating and seasonal interpretation.

In 1981, Joseph Winter of the Office of Contract Archeology conducted test excavations at these sites (Hogan and Winter 1981). Again, the dating and seasonal use were confirmed. Both corn remains (Toll 1981) and corn pollen (Clary 1981) were found. Ceramics at these sites were predominantly brown wares, supplemented by Cibola white wares that were probably imported (Marshall 1981).

Sevilleta Shelter, in Palo Duro Canyon, was another Pueblo II farming site, reused in the 17th century (Winter 1980). Both it and the Los Alamos Canyon sites may also have been used for hunting, wild plant gathering, and stone tool manufacturing. The ceramics, analyzed by Michael Marshall (1980c), include a mixture of Mogollon brown wares and a southern version of the Anasazi Kwahe'e white wares. These sites east of the Rio Grande thus join sites west of the river in displaying mixed Anasazi and Mogollon ceramic assemblages (Wimberly and Eidenbach 1980).

Sevilleta Shelter and the Los Alamos Canyon sites, taken together, suggest summer farming of the canyons west of the Los Pinos range during the Early Elmendorf phase. Early pueblo sites have also been found against the base of the Los Pinos Mountains (M. Marshall, personal communication). It appears at present, though, that Pueblo III populations did not maintain such farming sites in this area (Hogan and Winter 1981).

The Late Elmendorf phase is roughly coeval with

Pueblo III, ca. 1100 - 1300 A.D. The nucleated villages of Early Elmendorf coalesced into large, fortified sites. Cobble-based jacals and pit structures continued in use, but masonry construction became increasingly frequent. At one site masonry was used for outside defensive walls, jacal for interior plaza-facing partitions. There is little midden at most of these sites, suggesting brief occupations. Most masonry buildings display from 22 to 54 rooms, but one contains about 150. Marshall and Walt (1984) estimate the regional population at 1000 to 1500 individuals.

There was increased variety in site form, with most sites showing some tendency toward plaza formation. No upland components are known. While isolated small hamlets and nucleated villages continued on exposed, open benches, there is a decided trend toward settlement of elevated, defensible buttes, knolls, and benches along the river. There is a 76% increase in the total number of rooms from Early to Late Elmendorf, and a 98% increase in total roofed area. Much of this no doubt reflects population increase, but there may also be some covering of Early Elmendorf sites. Marshall and Walt relate the defensive settlement pattern and apparent increased social integration of the Late Elmendorf phase to the regional unrest of the times. This was the period of the Chacoan collapse, and of migration and regional depopulation in a vast area from the northwest to the west to the southwest of the Rio Abajo.

Ceramically, the Late Elmendorf period is characterized by a continuation of the Pitoche brown wares and Elmendorf white wares. Intrusives include Chupadero white wares, Cibola white wares, and Socorro white wares. Cibola gray wares constitute less than 2% of the sample. White Mountain red wares are present, especially St. Johns Polychrome (Marshall and Walt 1984:95-98).

At the Tajo 2 pithouse site, located on a river terrace a short distance southeast of Socorro, Weber (1973a) found close architectural parallels with late pithouse sites in the Rio Grande Valley to the north. At Tajo 2, however, Weber found a greater number of textured culinary brown wares in the Mogollon tradition, while the Albuquerque area pithouses displayed more Anasazi characteristics. In what he terms a "small selected collection" taken from the surface of the site, Weber (1973a:19) found 14 sherds of Elmendorf

B/w, 5 of Chupadero B/w, 3 of St. Johns Polychrome, 2 of McElmo B/w (Chaco variety), 1 of a Tularosa B/w variety, and 1 possible piece of Cebolleta B/w. These ceramics were identified with the assistance of Stewart Peckham. An occupation extending possibly into the late 1200s is seemingly indicated (Weber 1973a:19). Such a late date for pithouse use would duplicate the pattern in the Albuquerque area (Cordell 1979:43-44), and in the Gran Quivira region.

Another relatively late pithouse site, located just north of the overview boundary near Belen, was reported by Ferdon and Reed (1950). Surface sherds included one smudged interior brown ware, one light gray corrugated, one Wingate B/r, two Chupadero B/w, one Tularosa B/w variety, and four indeterminate B/w (but resembling Socorro and Chupadero B/w). In the fill of one pithouse were found five B/w sherds comparable to Santa Fe B/w, one Los Lunas Smudged, and three brown corrugated (Pitoche Rubbed-ribbed variety). Ferdon and Reed (1950:41) place the site in the Pueblo III period, around 1200 A.D.

In the lower Rio Puerco and Rio Salado areas, Wimberly and Eidenbach (1980:89) record debris scatters and pueblos of varying sizes during the Pueblo II period. Many of these pueblos display masonry construction, but one possible jacal was recorded.

Marshall's (1980) analysis of the ceramic assemblages (Fig. 3) reveals a dominant percentage of brown ware along the lower Rio Puerco, with carbonaceous white wares reaching a peak. Cibola gray wares and white wares were minor components, while Socorro white wares were increasing in frequency. Along the Rio Salado Marshall found the same dominance of brown wares, decreasing proportions of Cibola white wares, and minor amounts of other varieties. These projected trends must be viewed as tentative since, although Marshall (1980:165-166) attempted to minimize bias in his collection procedure, his sample sizes were often small.

Stewart Peckham (1976:56-57) has pointed out that the area from Socorro to Truth or Consequences shows consistent ties to the Mimbres region in the form of a fine paste, polished brown ware that carries on into the Alma Plain tradition. He suggests that the occupants of the Socorro-San Marcial district were the donor population for the settlement of the northern Jornada del Muerto and Chupadera Mesa.



### The Upland Area

The early pueblo period in the Salinas Province and adjacent areas is characterized by jacal construction (Caperton 1981), although late pithouses are known (Ice 1968). This period is here called the Jacal Period for the sake of convenience and may roughly date between 1175 and 1350 A.D. There is some evidence at the Taylor Draw site that jacal construction in southeastern Socorro County may date somewhat earlier. Jacal construction, furthermore, continued in use at later, masonry sites in the area.

In his survey, Caperton (1981) found that villages of this period contained from 1 to 10 rooms per house unit, and from 1 to 50 house units per village. House units occurred in I, L, F, and E shapes, but most often in the first two. Village axis generally ran north-south, with extensions toward the east. No standard village plan is evident.

Ten single component jacal sites were recorded. Three of these were clustered in the northwest part of Chupadera Mesa, leading to Abo Pass. The remainder were located in the southern portion of Caperton's survey area. Caperton found no jacal sites in the area of Jumanes Mesa, but a more recent survey has located a village of this kind on the Cibola National Forest.

In the northwest section one site yielded 17 sherds, of which 13 were Jornada Brown, 2 Chupadero B/w, 1 Lino Gray, and 1 unidentified. The remaining two sites contained lower percentages of brown wares. Corona culinary ware was present at both. One piece of Santa Fe B/w was the only trade specimen.

The southern villages tend to be larger. Trade wares at these were more diversified, including Wingate B/r, Socorro B/w, Red Mesa B/w, Klagetoh B/y, San Marcial B/w, Mancos B/w, San Andres Red-on-terracotta, Pilares Banded, Los Lunas Smudged, Cebolleta B/w, St. Johns Polychrome, Heshotauthla Polychrome, Santa Fe B/w, Galisteo B/w, and Poge B/w. The trade wares indicate a temporal range of 1175-1350 A.D., and suggest social and economic interaction with populations to the north and west, rather than to the south.

Corona Corrugated first appears in the Jacal Period, averaging 7% of all sherds. Corona Plain averages 2%. Jornada Brown decreased from 66% in the Pithouse Period to 17%, while Chupadero B/w

increased during the same time period from 6% to 30%.

Defense seems to have become more important during the Jacal Period. Four of ten single component Jacal sites were on ridges; others were placed in the same locations as later masonry sites. Caperton believes that these latter sites were in defensive locations.

Late in the Jacal Period an intermediate type of construction came to be used. Crude masonry footings were employed, or stones were added to adobe to form conglomerate walls.

In 1953 and 1954 Stewart Peckham conducted a limited survey and excavation project at the southern end of Chupadera Mesa in order to gain chronological information for the northern Jornada area. As part of this project he excavated the Taylor Draw site (Peckham 1976), located in the southeastern section of the central New Mexico overview area. Portions of the site may fall into Caperton's Jacal period, at least architecturally, although the dating leaves open the possibility of assigning part of the occupation to the Pithouse Period.

Taylor Draw was one of several sites found during Peckham's survey which displays the same surface characteristics: arcs or straight alignments of contiguous surface rooms outlined with upright sandstone slabs, polished or well-smoothed brown wares, occasional sherds of Red Mesa B/w, and chipped limestone debris. Taylor Draw (LA 6565) was the largest of these sites. It was chosen for excavation because of the association of brown wares with Anasazi ceramics and architecture (Peckham 1976:37).

The site contained seven clusters of slab-lined surface rooms arranged in arcs or straight, single tiers. Four pithouses, a kiva, and 22 surface rooms were excavated (Map 6). Interior features of the pithouses consisted of stone clusters and alignments around the perimeter of the structure, hearths, ventilators, and ladder holes. The surface rooms had inside and outside hearths, as well as outside post holes. Some of these latter features may have been ramadas. Maize was found in association with rooms, as were manos, choppers, hammerstones, scrapers, polishing stones, bone awls, a pottery pipe, a pottery scoop, and several projectile points. The kiva was the only structure of this kind found along Taylor Draw.





Map 6. Taylor Draw site, LA 6565 (after Peckham 1976:40).

A number of tree-ring dates were obtained. None of these were cutting dates, but the readings were so consistent as to indicate that the site was occupied for about 50 years in the late 900s/early 1000s A.D. This is within the time range of the intrusive Red Mesa B/w, and is not substantially at variance with intrusive Mimbres pottery. The available dates, however, came from the pithouses. No suitable specimens were found in the surface structures. Thus, contemporaneity between the two types of structures cannot be absolutely demonstrated (Peckham 1976:50).

Plain brown wares constituted 90 to 100% of the sherd samples from Taylor Draw. Most of these sherds do not resemble either El Paso Brown or Jornada Brown, but instead are similar to Mera's Coarsened Alma. Some might be classified as San Andres Red-on-terracotta. Intrusive brown wares included a few sherds of El Paso Brown, an unnamed plain corrugated ware, and Three Circle R/w. Somewhat more common, but still rare, was Mimbres B/w. This, coupled with the absence of Mangus B/w, may reflect reoccupation after abandonment of the settlement (Peckham 1976:51).

One of the pithouses at Taylor Draw, Feature 17, displayed Rio Grande characteristics, and was similar to Green and Fenenga's pithouses near Gran Quivira. The other pithouses at the site were not Mogollon in character. The kiva, Feature 22, has no known architectural counterpart in the Rio Grande Valley (Peckham 1976:58-60).

Peckham concludes that comparative data are too

scanty to reach a definitive cultural/temporal synthesis of the site. The title of his report, however, which suggests that Taylor Draw might be characterized as "A Mogollon-Anasazi Hybrid," may convey some notion of his interpretive leaning (1976:37, 62).

At the late pithouse manifestation at Gran Quivira reported by Ice (1968), two pithouses and four surface rooms were excavated. The walls of the surface structures were made of puddled adobe with some stone, in contrast to the later occupation at Gran Quivira which used limestone masonry. The pithouses and surface rooms were essentially contemporaneous. No Glaze A ceramics were found in either. The presence of Wiyo B/y and Heshotauthla Polychrome in the pithouses dates their use to the late 1200s.

One small pithouse, rounded in outline with square corners, measured 7.25 x 8.25 ft., and included a hearth, an ash pit, and four postholes. A second, rectangular pithouse measured 7.0 x 9.3 ft. These differed substantially from the earlier pithouses reported by Green (1955) and Fenenga (1956), which were large and circular.

The results of Beckett's (1981) survey of Gran Quivira, and Ice's (1968) excavation of these late pithouses, indicate that Gran Quivira sustained a large number of people, and may have been a population center, before the masonry pueblo was built. The late date for Ice's pithouses suggests that the transition to masonry architecture occurred rapidly at this site.

### The Riverine Area

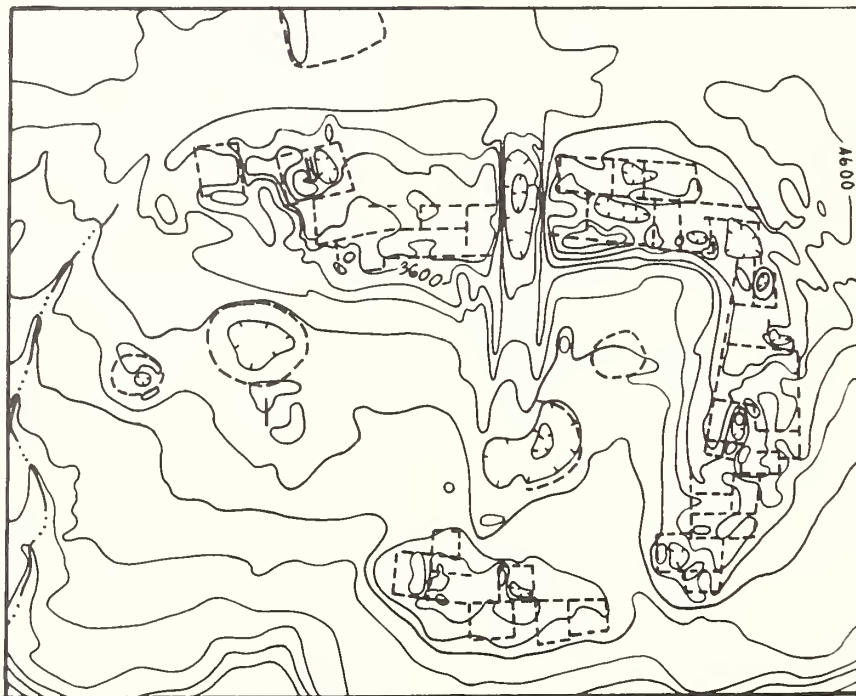
As with earlier time periods, little is known about the late Puebloan occupation of the riverine area. This situation may be resolved somewhat within the next few years. Dr. Linda Cordell of the University of New Mexico, in a joint UNM-Bureau of Land Management project, has recently conducted excavations at a badly vandalized ruin (LA 282), that has been suggested to be the historic Piro site of Teypama (Map 7) (Earls 1981). Stuart Baldwin of the University of Calgary has conducted documentary studies of Piro sites as part of his doctoral dissertation research. Marshall's (1982) survey in the area provides us, again, with a major source of knowledge.

Early surveys in the Socorro riverine area were conducted by Mera (1935, 1940a, 1943) and Yeo (n.d., 1948). Mera (1935) suggests that west of the Rio Grande Valley there are no pottery types derived from Socorro B/w. Within the overview area, though, he suggests two: Casa Colorado B/w in the valley and Chupadero B/w east of the valley. Mera describes Casa Colorado as being characterized by smoothing of undecorated surfaces, while Chupadero undecorated surfaces were roughened. Otherwise, he finds the two

In a general survey of the Socorro riverine area, Yeo (n.d.) found numerous small house sites, camps, village sites, and rock art panels. He notes trade wares originating in central Chihuahua, the upper Gila Valley, the Little Colorado area of Arizona, the Galisteo Basin, and the Three Rivers area of the Tularosa Basin.

Marshall (1973:50, 52) initially termed the interval from 1200-1400 A.D. in the riverine area the Late Socorro phase, and correlated it with the El Paso phase of the Jornada Mogollon sequence. One excavated site pertaining to this period, LA 2569, lies on the lower Rio Puerco a few miles northwest of the overview boundary (Fenenga and Cummings 1956b). This site consisted of jacal rooms in both oval and irregular shapes, and rectangular rooms with coursed adobe or, rarely, masonry. A definite plaza was present. Indigenous ceramics included Pitoche Brown ware (Plain, Rubbed, Ribbed, and Smudged) and Socorro white ware. Intrusive ceramics were Lino Gray, Escavada B/w, Wingate B/r, and St. Johns Polychrome. There were minor quantities of Chupadero B/w.

Based on the results of his more recent survey Marshall identified a phase that he terms the Ancestral Piro. He places it between 1300 and



Map 7. LA 282, a Late Piro Pueblo.

1540 A.D., the latter date marking the Spanish entrada. It reflects, he suggests, both indigenous descendants of Elmendorf populations and recent immigrants. Characteristics of the Ancestral Piro phase include: (1) dramatic population increase, perhaps 7 times the Late Elmendorf level, (2) aggregation into large, plaza-type villages, (3) expansion into riverside areas that were previously unoccupied, and (4) prevalence of puddled adobe architecture.

Local population growth and immigration precipitated the establishment of fortified 14th century settlements. These are located on butte-top pinnacles, elevated benches, low benches, riverbank locations, and within lateral drainages. The Ancestral Piro phase witnessed the first substantial settlement of the southern riverine area since the San Marcial phase, and the first major expansion to the west bank. Settlements existed on the Rio Salado. Sites tend to be regularly distributed, in contrast to the Tajo/Elmendorf concentrations, and are often paired on the east and west river banks.

Site structure became standardized, with room blocks arranged around a plaza. Fourteenth century sites average around 100 ground floor rooms (range 60 to 122). Fifteenth century sites are fewer but larger, with from 200 to 600 ground floor rooms. At the extremes, there are small hamlets with 10 to 12 rooms, and one site with 1500 rooms and an estimated 2000 people. Often a kiva-like pit structure is found in the plaza.

The 14th century dislocation was at some point apparently resolved, for 14th century defensive settlements give way to larger, lower elevation 15th century pueblos. There is a population shift during this latter century to the southern riverine area, a fact that Marshall relates to the development of water control. Population of the Rio Abajo peaked in the years just before Spanish diseases and policies decimated the native settlements. Marshall estimates a 15th century population of 7500, a figure not reached again until the mining boom of the 1880s.

The ceramics of the period saw revolutionary developments. The local Pitoche brown wares and Elmendorf white wares were succeeded by the Rio Grande glaze ware and gray ware traditions (Marshall 1982; Marshall and Walt 1984:135-137).

The succeeding Colonial Piro phase, from 1541 to the abandonment during the 1680 Pueblo Revolt,

marks the period of Spanish entrance and domination. There was a substantial population decline, and a drop in the total number of pueblo rooms. Ten Ancestral Piro villages continued to be occupied, nine were abandoned, and nine new ones were established. There was a slight increase in the west bank population, a reduction in the Rio Salado population, and the establishment of two upland pueblos near Magdalena. Marshall feels that these last may have housed from 1/4 to 1/3 of the Colonial Piro population. Since they are not mentioned in the pre-Revolt Spanish literature, Marshall suggests that Spanish domination might have been restricted to the river valley (1984b:256). As will be seen shortly, a similar pattern is also evident east of the riverine area.

Marshall notes two settlement types in the Colonial Piro phase. These are (1) large plaza communities of Ancestral Piro form, with large, square rooms built of adobe bricks laid out in grid-like fashion on masonry footings, and with a chapel/church and associated compounds, and (2) smaller, 8 to 36 room pueblos of variable form called the "Colonial" style.

Ceramics of the period include Glaze E and F variants, plain Rio Grande gray wares, and some Tabira, Jemez, and Tewa white wares. Imports include majolica, Mexican earthen wares, and china (Marshall 1982; Marshall and Walt 1984:138-141).

Northwest of the overview area, Gossett (1980) recently conducted a study of lithic assemblages along the Rio Salado and lower Rio Puerco, in which four distinct patterns were found.

Pattern 1 consisted of sites with high percentages of unutilized flakes, and low percentages of unutilized angular fragments, cores, hammerstones, and utilized flakes. These appear to have been places where primary reduction was a major activity.

Pattern 2 sites displayed equally high amounts of unutilized flakes and rejuvenation flakes. A moderate percentage of unutilized angular fragments were present. There were low percentages of utilized tools, cores, and hammerstones. These appear to have been locations where such factors as the distance to raw material sources, quality or rarity of raw materials, or intensity of activity created the need for frequent tool rejuvenation.



In Pattern 3 sites there was a relatively high percentage of unutilized angular fragments and unutilized flakes. There were correspondingly low percentages of utilized tools, cores, and hammerstones. These sites, then, display a strong element of primary reduction activity, as well as evidence of tool use. Gossett (1980:200) suggests that these patterns may relate to long-term occupation.

Pattern 4 consists of high percentages of unutilized flakes, angular fragments, and cores. There were low percentages of utilized cores and hammerstones but utilized flakes were absent. Primary reduction appears to have been a major activity at these sites.

Gossett (1980:200) notes no association between these patterns and either time period or spatial distribution. There does seem to be some correspondence between Pattern 3 and the presence of structures, supporting the idea that this pattern results from long-term occupation. Patterns 1 and 2 appear to be associated with open-air scatters that lack structures.

Patterns of ceramic change in this area after 1300 can be seen in Fig. 3. Along both drainages brown wares remained abundant, but declined somewhat, while the Rio Grande glaze wares rapidly gained in importance. Western red wares became increasingly prominent in both localities (Marshall 1980:187).

David Snow (1969), Jack Wilson, Michael Marshall (1976) and Stuart Baldwin (1980b) have independently attempted to locate the historic Piro villages based upon historic records and modern archeological reports. As of this writing, the only professional excavation at a late Piro riverine site is Linda Cordell's work at LA 282 (Earls 1981).

#### The Northern Jornada del Muerto

East of the riverine area, in the northern Jornada del Muerto, Mera (1940a) has documented the existence of a major puebloan occupation during the glaze era. Mera (1940a:5) divides this era into five periods, as follows:

Period 1: This period begins with the regional adoption of Glaze A, with Glaze B restricted to the northeast. Mera would date this period at 1350 to 1450 A.D. Warren

(1980:159) has more recently provided updated estimates for Rio Grande glaze ceramics (Table 8).

Period 2: Glaze C. Mera's dates are 1450 to 1490.

Period 3: Glaze D. Mera places this period between 1490 and 1515.

Period 4: Glaze E. Mera's dates are 1515 to 1650.

Period 5: Glaze F. Mera dates this period at 1650 to 1700.

Mera's maps show continual occupation of the northern Jornada del Muerto throughout these five periods. The major occupation occurred in Period 1. During Period 2 there was a major decrease in the number of sites, possibly resulting from aggregation of populations into fewer but larger settlements. During Periods 3 and 4 there was a reversal of this pattern, a trend toward dispersal of population among smaller settlements. During Period 4 Spanish intrusions among populations to the north and west would have been known to the residents of the northern Jornada del Muerto. (Indeed, it is interesting that there are no known Spanish settlements in this area, or even records of these native villages.) In Period 5 the same number of settlements was maintained (22), but there was continuity of occupation in only half of them. All new settlements were comparatively small. Taking into account the location of these new settlements, Mera (1940a:6) postulates a strategy of population dispersal, which might attract less attention from the Spanish.

Elsewhere in the southeastern quadrant of the overview area only sporadic investigations have been undertaken. Weber and Agogino (1968; Agogino and Weber 1970) report a late glaze occupation at the Mockingbird Gap site, and suggest that it represents a farm site used by populations trying to avoid the Spanish. In a contracted survey in this area, Beckett and Shelly (1977:8) found that most sites were located on or near a playa edge, and at playa-arroyo confluences. They found an association between tool manufacturing and areas of localized desert pavement. In a more recent survey in this area, Frizell (1980) found only an isolated mano.



### The Upland Area

The late prehistoric and early historic occupation of the upland area is better documented than any other aspect of the archeological record of central New Mexico. The confrontation between Spanish and natives, the spectacular mission architecture of the period, and the dramatic collapse of the Salinas pueblos in the 1670s have combined as a magnet attracting seemingly endless archeological interest. This interest has generated much literature on the late period of the Salinas area, but at the same time it has been biased in its approach, focusing on Spanish architecture rather than Spanish-native interaction, large pueblos rather than smaller settlements and non-architectural sites, and description and classification to the exclusion of cultural process.

Caperton's (1981) Masonry Period can be subdivided into two distinct units. The earlier of these, the Early Masonry period, appears late in the pre-glaze era. There are village plans of rectangular units arranged around a plaza. A kiva was usually placed in the plaza. All but two such sites were oriented to the east, with the long axis north-south.

In the southern part of Caperton's survey area trade wares on Early Masonry sites included Red Mesa B/w, Kana-a Gray, Chaco B/w, San Andres Red-on-terracotta, Wingate B/r, Tularosa B/w, El Paso Polychrome, Los Lunas Smudged, Lincoln B/r, Heshotauthla Polychrome, St. Johns Polychrome, Santa Fe B/w, Agua Fria G/r, and San Clemente G-P. Some of these wares reflect contamination from earlier occupations at these southern sites.

On single component northern sites were found St. Johns Polychrome, Poge B/w, and an unidentified ware in the Mesa Verde tradition. No Jornada Brown was found on the northern sites, a fact which may reflect the abandonment of the Jornada area. But in the south Jornada Brown amounts to 8% of the ceramic assemblages. Corona Corrugated averages 16% in the south, 27% in the north. Chupadero B/w reached its peak during this period, averaging 42% of southern ceramics and 50% of northern ones. Glaze wares made a significant appearance.

This period may reveal the greatest concern with defense. Only one site was not located on a promontory. Baldwin (1983) suggests that during this period (ca. 1275-1300 A.D.) Cebolleta Mesa

Kowina phase populations migrated to Abo Pass. He bases this inference on ceramic similarities between sites in Cebolleta Mesa and Abo Pass.

One site dating to this time period, LA 2945, located near Corona, was excavated by Wendorf (1956) as part of the highway salvage program. It was once a sizable site, but only a segment in the road, consisting of 12 adobe-walled rooms, was preserved. Wendorf (1956:88) notes the following sites in the area:

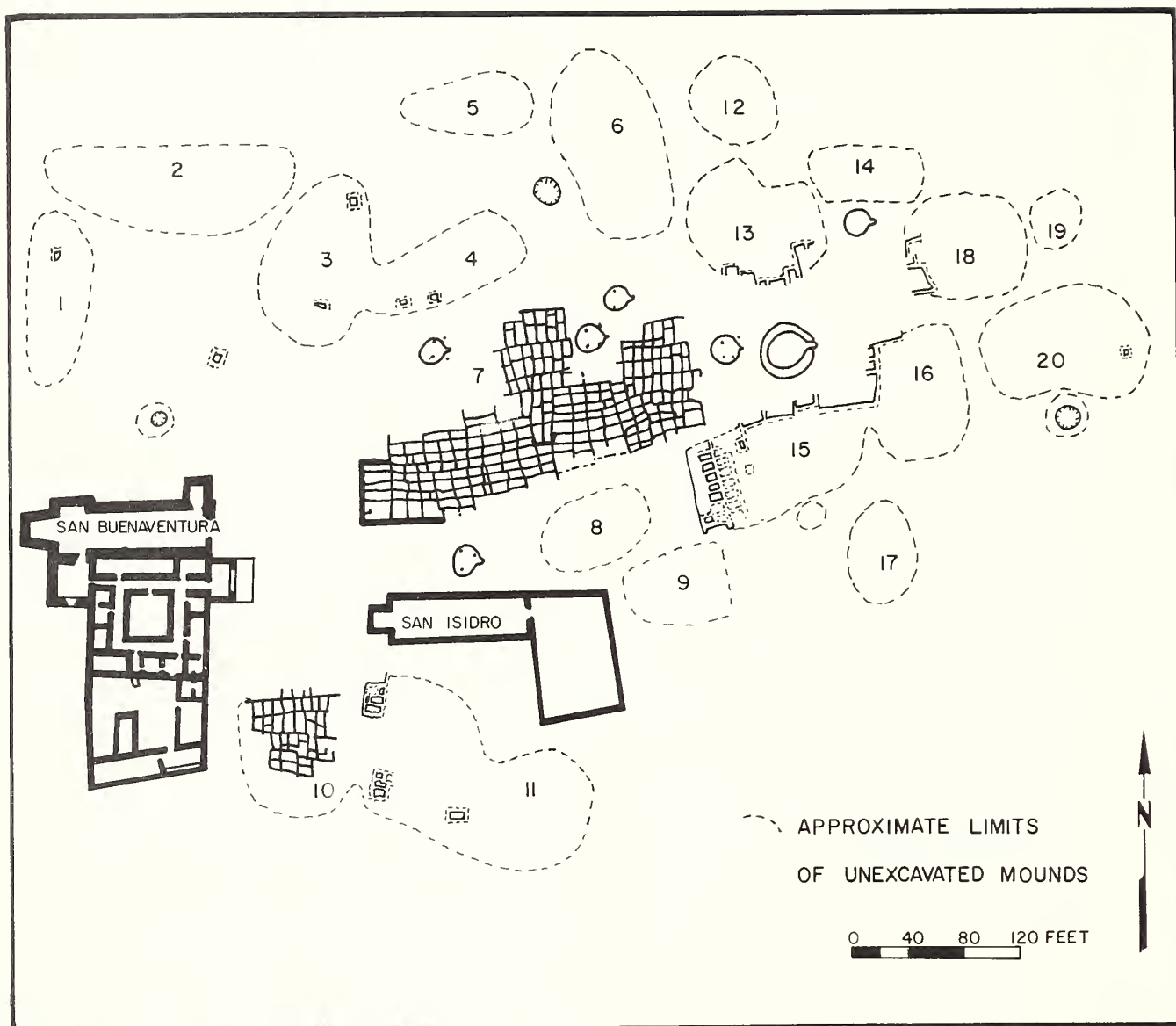
1. LA 2945, the primary site excavated.
2. A fragmentary, adobe-walled pueblo with two room blocks and a possible pithouse.
3. A large masonry pueblo, originally at least two stories high.
4. A masonry pueblo, somewhat smaller than number 3, but with similar ground plan and construction. No Glaze A was observed on the surface.

Wendorf (1956:88) concludes that sites 1, 2, and 4 were approximately contemporaneous, despite different construction techniques and village plan. Site 3 is placed slightly later.

The dominant painted pottery was Chupadero B/w, which comprised 33% of the assemblage. Corrugated brown ware totaled 36%, and plain brown ware 9%. Playas Red and Playas Incised, imported from Chihuahua, totaled 19%, but all except three sherds came from two vessels. The remaining sherds were of rare types: St. Johns and Heshotauthla Polychromes, Three Rivers Red-on-terracotta, Lincoln Black-on-red, and Los Lunas Smudged. Wendorf (1956:104) finds difficulty assigning the site to any period in the Jornada Mogollon sequence, although he does see close similarities in architecture and pottery.

During the Late Masonry period larger villages formed, and less consideration was given to defense. Since this is the period on which most archeological work in the area has concentrated, it will be described in some detail in the pages to follow.

Mera (1940a) has described some aspects of settlement trends among the villages on the east flank of the Manzanos. All of the well-established settlements, except for a few



Map 8. Gran Quivira (Pueblo de las Humanas) [after Hayes 1981:13].

small black-on-white sites, were confined to the piedmont region. Four out of six glaze sites were located on streams, two near springs. The area was sparsely populated at all times. Black-on-white sherd scatters in the Estancia Basin reflect short-term occupation. Special-use sites have been identified in the northeastern Manzano Mountains (Garber 1982) and near Mountainair (Tainter 1979).

Three sites were occupied during Mera's (1940a) Period 1. Two were occupied in Period 2, but

these were larger and reflect aggregation. There were two in Period 3; then, in the latter part of Period 4, the area experienced an increase to five settlements. Six were noted for Period 5, the largest number of any time interval.

Site LA 383, near the town of Manzano, was first occupied during Period 5. Mera (1940a:23) suggests that it may have been settled by a remnant population occupying the locale after the abandonment of the Salinas Province.

## Gran Quivira Excavations

Excavations at Gran Quivira (Map 8), both illicit and professional, for treasure and for information, have been conducted for many years. The first major, sustained research project at the site was by the School of American Archaeology (later to be named the School of American Research), between 1923 and 1925, directed by Edgar L. Hewett (1923a, 1923b, 1924a, 1924b, 1925, 1926, 1927a, 1927b; Halseth 1926; Bloom 1927). This project cleared the mission of San Buenaventura, and excavated a large plaza with two kivas, plus some nearby rooms in Mound 15. Of the two kivas, the larger one is the largest in the pueblo. Hewett (1923a) suggests that it served integrative functions extending to a large social segment.

Just west of the larger kiva was a large mound that Hewett (1923a) describes as standing seven feet above the plaza level. The fill of this mound was a black dirt that Hewett felt was foreign to that part of the settlement. This feature contained numerous burials, and Hewett accordingly called it a burial mound. After completing the excavation of this feature in 1965, however, Hayes noted that the 20 burials recovered were not an unusual concentration.

In 1951, the National Park Service Ruins Stabilization Unit, directed by Gordon Vivian, excavated 37 rooms of House A (Mound 10), San Isidro Church, and Kiva D near the southwest corner of Mound 7. Following Mera, Vivian (1964:103) notes that the local brown wares in this area resembled the Anasazi gray-paste utility wares in corrugated, clapboard, and other surface treatments, but retained their brown ware character in brown, sandy, friable paste. By the Pueblo III period the utility wares known as Corona Rubbed-Indented and Corona Rubbed-Ribbed were being produced. Vivian believes that the culinary pottery of Gran Quivira continues the Corona Rubbed-Indented pattern.

Carbon paint wares were not adopted on the east side of the Manzanos, including Gran Quivira. Furthermore, the influence of the Mesa Verde decorative style did not emerge in this area (Vivian 1964:146). Glaze wares, which totaled about 20% of all pottery, were at first not made at Gran Quivira. Vivian traces their local production to Glaze D and later periods, from about 1550 on, but Warren found minor amounts of

local glaze production prior to that time (Warren 1981).

Vivian (1964:147-154) points out interesting technological discontinuities between the Gran Quivira area and the rest of the northern Southwest. Gran Quivira populations persisted in the use of mineral paint after carbon paint had been adopted elsewhere, and in the use of brown wares after other regions had more completely adopted the Anasazi ceramic pattern. There was persistence of Chupadero designs rather than adoption of Mesa Verde patterns. Manufacture of painted ceramics continued to focus on the black-on-white wares after glazes had been adopted elsewhere.

Vivian also notes a spatial/temporal discontinuity in kiva architecture beginning about 1400 A.D. After this date, Gran Quivira populations did not maintain the same kiva architecture as the Rio Grande Valley. By the time Gran Quivira was abandoned, around 1672, kivas had come to resemble those kivas used in the Rio Grande area 300 years earlier (Vivian 1964:148-149).

Vivian (1964:152-154) attributes these technological discontinuities, what he terms the "retarded period after 1300," to the "Mogollon strain" (1964:152), the populations which may have moved into the area after the abandonment of the northern Tularosa Basin. Vivian ascribes to this population influx the late adoption of Anasazi characteristics in Gran Quivira ceramics and religious architecture. He believes that these immigrants introduced a lack of social cohesiveness to the community. Vivian does not attempt to explain the assumptions or conceptual basis of his interpretations, nor detail how these might be tested, but these points will be discussed in the next chapter.

By far the most extensive excavation undertaken at Gran Quivira was the uncovering of Mound 7 in the mid 1960s, directed by Alden C. Hayes (Map 8). The reports resulting from this work have only recently seen the light of publication (Hayes 1981).

Hayes was able to discern three phases of occupation at Mound 7. Some of the characteristics of these are shown in Table 6. The early pueblo was mainly round, and was centered on a small plaza and kiva. It held

perhaps 209 rooms, or maybe somewhat less.

In a sample of 324 demonstrably Early phase sherds, Hayes characterized the ceramic assemblage of this period. The breakdown of this sample is shown in Table 7. The single sherd of Tabira B/w in this sample is probably intrusive. All of the others, except perhaps the Largo G/y sherd, were common 14th century wares. The

relative lack of glazes in this sample indicates construction around 1300, or perhaps a few years earlier.

During the Middle phase the planned symmetry of the early occupation was distorted by room additions. Some of the early rooms and kiva continued in use. Nothing was found in situ on the floor of these rooms, so Hayes was forced to

Table 6

Phase Characteristics of Mound 7, Gran Quivira

| Early Phase<br>1300 - 1400  | Middle Phase<br>1400 - 1550      | Late Phase<br>1550 - 1672               |
|-----------------------------|----------------------------------|-----------------------------------------|
| Circular, clay<br>firepits? | Rectangular, clay<br>firepits    | Rectangular<br>slab-lined<br>firepits   |
| Trough metates              | ?                                | Slab metates                            |
| Full grooved axes           | Spiral grooved axe<br>introduced | Spiral gooved<br>axes                   |
| Informal shaft tools        | ?                                | Stylized,<br>formal shaft<br>tools      |
| Corona Corrugated           | Corona Plain introduced          | Corona Plain                            |
| Chupadero B/w               | Chupadero B/w                    | Tabira B/w,<br>Plain, and<br>Polychrome |
| Inhumation                  | Inhumation                       | Inhumation and<br>cremation             |

Table 7

Ceramic Characteristics of Gran Quivira Early Phase

|                        |                        |                        |
|------------------------|------------------------|------------------------|
| Jornada Brown - 1      | Socorro B/w - 1        | Agua Fria G/r - 8      |
| Corona Corrugated - 46 | Galisteo B/w - 1       | Kwakina Polychrome - 1 |
| Corona Plain - 12      | Tabira B/w - 1*        | San Clemente G-P - 1   |
| El Paso Polychrome - 1 | ? white ware - 57      | Largo G/y - 1          |
| Los Lunas Smudged - 2  | Heshota Polychrome - 1 | Conetas Polychrome - 1 |
| Chupadero B/w - 161    | Los Padillas B/w - 3   | ? glaze - 12           |
|                        |                        | Plain - 13             |

\* probably intrusive



estimate the temporal span of this phase.

The Late phase, like the Middle, witnessed construction by stages. Haynes notes a hiatus in tree ring cutting dates between 1515 and 1540. Within this interval there are only three dates, and only one cutting date. Prior to this, between 1433 and 1515, there was a total of five cutting dates plus four others that are probably close. For the following years, from 1540 to 1545, there are ten tree ring readings, of which five are definitely cutting dates. Thus, Hayes infers that sometime between 1515 and 1540 there may have been a period of 15 to 20 years when Gran Quivira's Mound 7 was not occupied.

The Late phase construction contains long stretches of common wall that were laid without breaks in the masonry. This would seem to indicate planned, coordinated construction. For this period Hayes estimates that about 45 to 50 families may have occupied the house.

There were six rooms near the outer walls of the Late phase house that Hayes characterizes as ceremonial rooms. Each of these had one or more decorated layers of plaster. The style of decoration in these was the same as in one painted kiva. All but one of these rooms was close to a kiva used in the Late phase. All of the kivas had been abandoned and destroyed 12-13 years before the abandonment of Mound 7 itself, probably as a result of Spanish conversion efforts.

The painted murals of Mound 7 have been analyzed by Barbara Peckham (1981). She dates these features from the 1400s to the abandonment of the site in 1672. The Mound 7 murals were simpler in design than those of Kuaua, Jeddito, and Pottery Mound, and lacked the formalized, Sikyatki-style designs found at the last two. Some Tabira B/w and Polychrome vessels from Mound 7, though, did have decorations that she characterizes as being like Sikyatki.

Among Late phase pottery vessels which were recovered intact, Hayes notes the following breakdown: 45 Corona Plain, 1 Chupadero B/w, 1 Tabira Plain, 32 Tabira B/w, 8 Tabira Polychrome, 3 Puaray G-P, 2 Glaze E or F, 24 Kotyiti G/r and G-P, 16 Salinas Red, and 1 Kapo Black. Other types that did not occur in earlier levels were

Sankawi Black-on-cream, Tewa Polychrome, Majolica, and Chinese porcelain.

The culinary pottery from Mound 7 is a brown ware. Hayes notes that this pottery shows greater similarity to Mogollon plain red and brown wares than to the gray utility wares of the northwest.

Gran Quivira is near the center of distribution of Corona Corrugated, but the precise borders of its range are unknown. It was introduced during the first two decades of the 13th century. Hayes dates it to between about 1225 and 1460. Corona Plain is a later version, dating from the mid 1400s to 1672.

At Mound 7 Chupadero B/w and Casa Colorado B/w appeared to be nearly identical, except for some slight differences in color and slip weight that Hayes attributes to clay sources. Hayes suggests that this ceramic variety was made around Chupadera Mesa in the area adjacent to the northern Tularosa Basin, in the northern Jornada del Muerto, and probably on the Rio Grande between Belen and Socorro. It was widely traded.

In a test trench at Quarai 11% of the pottery was Chupadero B/w. At Gran Quivira the numbers ranged between 64 and 75%. This suggests to Hayes that the northern limit of manufacture was on Chupadera Mesa. No Chupadero B/w is found in the Biscuit ware area north of Tesuque or from the Pajarito Plateau, even though Biscuit ware was the most popular white pottery imported at Gran Quivira. Chupadero B/w is, however, found all the way to northwest Texas.

The production of Chupadero B/w may have begun around 1175. Its manufacture ceased at Gran Quivira with the introduction of Tabira B/w and Polychrome around 1545. Chupadero B/w represents a local manifestation of the ubiquitous Chaco II style that covered the Anasazi area during the Pueblo II period. Hayes suggests, though, that both Chupadero and Socorro B/w, which display some temporal overlap, are more similar to the Cibola white wares Reserve and Tularosa B/w, then to Puerco B/w or Chaco II.

At the time of the rebuilding of the west end of Mound 7, which Hayes dates to 1545, Tabira B/w was introduced. It was apparently made only at

Gran Quivira, Pueblo Pardo, and Tabira. From the mid 16th century onward it was the only indigenous ware at Gran Quivira, except for culinary brown wares. The inception date of 1545 is later than Toulouse and Stephenson (1960) proposed in their Pueblo Pardo report, but Hayes feels that they may have misclassified some Chupadero sherds as Tabira.

Hayes gives the following inception dates for Tabira wares:

|                    |      |
|--------------------|------|
| Early Tabira B/w   | 1545 |
| Classic Tabira B/w | 1600 |
| Tabira Plain       | 1625 |
| Tabira Polychrome  | 1650 |

There was an increased use of symbolic designs on Tabira wares. Representational figures were widely employed, an unusual pattern for eastern pueblo pottery.

About one-third of the pottery at Mound 7 was made elsewhere. These imports were mostly glaze wares. The most important trade direction for pottery was to the west: the middle Rio Grande Valley, the lower Rio Puerco, Acoma, and over to the Cibola area and the White Mountains. Heshotauthla Polychrome was the most numerous western type. Next in importance was the area to the north, the Galisteo Basin, the northern Teras, and the Pajarito Plateau. Few sherds were found with a southern origin. Of these, El Paso Brown and Lincoln B/r were most frequent. The abandonment of the Tularosa Basin probably accounts for this. Some Ramos Polychrome, from Chihuahua, was recovered, as well as Mesa Verde B/w and Jeddito B/w.

Hayes discusses at some length mortuary practices at Mound 7. A total of 512 graves was excavated, yielding 516 individuals. An additional minimum of 42 individuals was recovered as scattered bone. Hayes was able to assign all but 8% of the graves to one of the three phases. Forty-four of the graves were assigned to the Early phase, 170 to the Middle, and 314 to the Late. The majority of the remainder were placed in Early/Middle or Middle/Late categories.

During the early 14th to the mid 16th centuries the dead were usually buried flexed, probably wrapped in blankets and bound, in simple, shallow graves below room floors, or in trash just outside the walls. Ninety-seven percent of the burials were flexed (including Hayes' semi-flexed

category, which distinguished individuals with one arm extended), 4% were interred sitting, 11% face down. Two-thirds were placed with the head toward the east. Three individuals were reburied as bundles after being disturbed by later interments. Two individuals were not buried, merely disposed of casually. One of these was an individual displaying severe physical abnormalities.

Most inhumations were in simple, unadorned graves. But in about 12% of the graves some extra degree of effort was made, such as slab lining (3), flagstone pavement set in clay (2), lining of walls and bottoms with sandy clay (12), covering with sandy clay (18), covering with flat limestone blocks (3), placing heads on unshaped limestone blocks (6), and placing large sherds over subadults, or placement of the head in a sherd (3).

Only 63 graves (17% of interments) had accompaniments. These were most often a piece of apparel. Infants of four years or less were twice as likely to be accompanied by some ornament. Thirty-seven percent of all burials were infants, but they were accompanied by 65% of all ornaments. None of the grave associations could be characterized as lavish. Functionally useful tools were found with 19 individuals, mostly adults.

A total of 149 cremated individuals was identified in the field, while an additional five were found when processing faunal remains in the laboratory. Cremation appears to have been restricted to the late period at this site. Only six cremated individuals were associated with the early to middle glazes or with Chupadero B/w. Of the 149 excavated cremations, only 24 were in burial pits that were something other than rudimentary. Two were lined with clay, one was lined with stone slabs, the bottom of one was lined with clean sand. Thirteen were covered with clay or sand, four were covered by flat pieces of limestone, one was overlain by two inverted Kotyiti G/r bowls. One cremation was placed in an unusual fire pit.

Grave associations were found with 81% of the cremations, as opposed to 7% of the inhumations. Hayes believes that much of this difference may be due to better preservation of carbonized organic matter. One of the commonest associations, found with 7% of the cremations, was shelled corn. Not all of this difference in

grave associations, however, can be attributed to preservation. Pottery occurs with 11% of the cremations as opposed to 2% of the inhumations.

Cremation cross-cuts age and sex distinctions at Gran Quivira. There is a low number of cremated individuals in the 10-17 year age category, but there were few deaths in this age grade anyway. Hayes suggests that cremation was introduced to Gran Quivira by a migration from the Zuni area.

The mortuary data from Gran Quivira provide a unique opportunity to study the social characteristics of a late prehistoric pueblo. The good chronological control, the large sample size, and the associated osteological studies combine to make this data set an unparalleled resource for Southwestern archeology. Although a complete analysis of these burials is beyond the scope of this study, and would be impossible anyhow with the reported information, some observations can still be made.

A crucial characteristic of mortuary ritual, and one that is essential to understanding archeological burial patterns, is the amount of energy expended in mortuary treatment. As one ascends a scale of social ranking, the number of persons recognizing status obligations to an individual increases. With increased duty-status relationships, the level of social involvement (and the disruption of normal community activities) in mortuary ritual increases (Binford 1971:17, 21). With greater amounts of social involvement in the mortuary act, the amount of energy expended in mortuary treatment increases (Tainter 1973). Energy expenditure in turn is reflected in such features as size and elaborateness of the interment facility, method of handling and disposal of the corpse, and the nature of grave associations.

There appear to be three major dimensions of energy expenditure in the reported data on the Gran Quivira burials. These three dimensions are cremation/inhumation, simple/complex grave construction, and the absence or presence and nature/quantity of associations.

Although Hayes treats cremation as a "custom," and suggests seeking its source in the Zuni area, it may be more profitable to view it as the single greatest energy expenditure contrast in the Gran Quivira burials. Based upon the far greater level of effort, custodial care, and social involvement called for in cremation, it

can be proposed that this practice indicates a dimension of social ranking in Gran Quivira society.

Given Hayes' observation that cremation seems to cross-cut age and sex distinctions, it would appear that this higher status was not based upon personal qualifications. The expenditure of identical amounts of effort in the interment of infants and adults, females and males, suggests that this social status may have been hereditary. Viewed in this light, the tendency for cremated individuals to be more frequently associated with some kinds of grave accompaniment, such as pottery vessels, is not surprising, for such associations merely reaffirmed the symbolic message of cremation, that these were persons of high status.

The appearance of cremation during the Late phase, around 1550 A.D., may thus indicate an important episode of social change. It would appear that the native social hierarchy at Gran Quivira underwent expansion at this time, with the addition of a new superordinate status level. This new status level continued in existence throughout the period of Spanish occupation.

Contrasts in the amount of energy expended in grave preparation are also noticeable. The most common method of disposal was in a simple grave. A minority of both inhumations (12%) and cremations (16%), however, were accorded some distinctive form of treatment. This included such things as lining the grave with limestone slabs or with special soil. The allocation of extraordinary amounts of effort to the preparation of these graves identifies these interments as persons of elevated social significance. What is most interesting is that this status, whatever its nature may have been, apparently cross-cut the cremation/inhumation distinction.

In short, available information on the Gran Quivira burials reveals a society characterized after 1550 A.D. by hereditary status distinctions, but perhaps less noticeably ranked prior to that time. Cross-cutting the observable status dichotomy was a second position of elevated social importance. Persons from both the high (cremation) and low (inhumation) status segments were able to hold this latter position (or positions). More intensive analysis of the primary burial data would no doubt reveal



considerably more about Gran Quivira society.

#### Ceramic Distributions:

An excellent, detailed study of production and trade patterns of pottery recovered from Gran Quivira was conducted by Helene Warren (1970a, 1981). In the early glaze ware periods (see Table 8), up until around 1450, practically all glaze pottery was imported from the Rio Grande area, with lesser amounts coming from the north. Galisteo Basin wares were imported to the site between about 1350 and 1450, Tonque wares between 1425 and 1525. The Gran Quivira excavations, though, uncovered none of the popular mid 16th century Puaray Glaze-Polychrome from Tonque. Warren suggests that this may indicate either a period of abandonment of Mound 7 or a cessation of trade. The former idea might dovetail with Hayes' conclusion that Mound 7 was abandoned for 15 to 20 years prior to 1540.

During the Glaze C period at Abo, and possibly at one or two neighboring Tompiro villages, a ceramic industry developed that supplied most of the glaze wares to nearby villages and to the northern Jornada del Muerto. This industry persisted until after 1600. Shortly after 1600, another glaze ware source developed at Quarai.

Warren believes that Chupadero B/w and Tabira B/w, the major white wares at Mound 7, were made at Gran Quivira. Differences in temper suggest to Warren that these two wares were made by two different groups, and that an outside group migrated to Gran Quivira at the time Tabira B/w appeared. Temper differences indicate a similar division between early corrugated and later plain utility wares. Chupadero and Tabira were traded in limited amounts to neighboring villages, but most trade involved the importation of glaze wares from the Los Lunas, Abo, and Quarai areas. Reflecting this pattern, the glaze wares at Gran

Table 8

#### Dating of Rio Grande Glaze Ceramics\*

| Group | Pottery Types                                       | Time Range    |
|-------|-----------------------------------------------------|---------------|
| pre-A | Los Padillas Glaze-Polychrome                       | ?1300 - 1325? |
| A     | Arenal Glaze-Polychrome                             | ?1315 - 1350? |
|       | Agua Fria Glaze-on-red                              | 1315 - 1425   |
|       | San Clemente Glaze-Polychrome                       | 1325 - 1425   |
|       | Cieneguilla Glaze-on-yellow and<br>Glaze-Polychrome | 1325 - 1425   |
| B     | Largo Glaze-on-yellow and<br>Glaze-Polychrome       | 1400 - 1450   |
| C     | Espinoso Glaze-Polychrome                           | 1425 - 1500   |
|       | Pottery Mound Glaze-Polychrome                      | 1400 - 1490   |
| D     | San Lazaro Glaze-Polychrome                         | 1490 - 1515   |
| E     | Puaray Glaze-Polychrome (early)                     | 1515 - 1600   |
| E-F   | Puaray Glaze-Polychrome (late)                      | 1600 - 1650   |
| E & F | Pecos Glaze-Polychrome                              | 1600 - 1700   |
| F     | Kotyiti Glaze-on-yellow,                            | 1650 - 1700   |
|       | Glaze-on-red, and                                   | or 1750?      |
|       | Glaze-Polychrome                                    |               |

\* after Warren (1980:159).



Quivira show diversity in physical properties through time, while the white wares show marked consistency in temper and clay. Less than 5% of glaze wares used at Gran Quivira were made there.

Glaze A Agua Fria G/r at Gran Quivira is characterized by a wide range of tempers and clays. This is typical of the entire Rio Grande glaze ware area during this period. Vesicular basalt tempered sherds (33%) resemble Agua Fria G/r at Pottery Mound, and may have come from there. Four percent contained the syenite temper of Abo, while 3% were locally made.

Minor amounts of Agua Fria G/r came from San Felipe, Tonque, and the Galisteo area; and particularly the last. But most ceramic importation was from villages south of Albuquerque.

San Clemente Glaze-Polychrome has similar distribution and temper types, but occurs at only about 14% of the frequency of Agua Fria G/r. Cieneguilla Glaze-on-yellow and Glaze-Polychrome were found in small quantities at Gran Quivira. These were traded mainly from the Galisteo area, although as much as 30% may have been made between Albuquerque and Socorro. No early glaze-on-yellow was made at Gran Quivira.

In the Glaze B period, Largo G/y, G/r, and G-P totaled less than 1% of the ceramic assemblage. Temper indicates that the G/r variety was spatially distinct from the G/y type. The G/r sherds seem to have originated in the southern glaze ware producing villages, while white or yellow slipped Glaze B sherds have temper used in the Galisteo and Tonque areas. One Largo G/r sherd contained local Gran Quivira temper.

During the Glaze C period several changes in trade patterns are reflected in ceramic temper. Up to 15% of glaze imports came from the Galisteo Basin. Imports from the Los Lunas area, or Pottery Mound, dropped off to less than 4%, contrasting with 15 to 60% earlier. Pottery Mound, however, was abandoned late in the Glaze C period.

Two Glaze rim sherds with Pecos sandstone are of interest because little is known of trade with that area prior to 1600.

In the Glaze D period the percentage of pottery from Tonque dropped to 25%, while that from Abo increased to 45%. A few sherds with a crystal

vitrophyre temper may have come from the Kuaua-Puaray area near Bernalillo. A small percentage of the Glaze D vessels was made at Gran Quivira.

There is an absence of trade wares dating to the middle decades of the 16th century. Except for a few Puaray Glaze-Polychrome sherds of the "late" Tonque wares, no Glaze E sherds from that area are present at Gran Quivira, even though the trade industry at Tonque was at its height during the 16th century. Warren believes that this indicates either a cessation of trade with the northern Rio Grande, or an abandonment of Mound 7. Warren observes that all Glaze E pottery at Gran Quivira has a "late" appearance, perhaps from 1580 on, and transitional to Glaze F. (Note that this date is about 40 years later than the occupational hiatus postulated by Hayes.) But since most of the pottery at this time came from the Abo area, and since little is known of the chronology of Abo, Warren concludes that it is not possible to reach definitive answers based on pottery alone.

Trade wares from the Quarai area first appeared late in the Glaze E period, totaling about 10%. This is consistent with the proportion of late Glaze E to Glaze F sherds at Quarai itself. Quarai pottery has a distinctive hornblende gneiss or schist temper that seems to have first come into use post - 1600.

A number of trade wares from the upper portion of the Middle Rio Grande Valley, including some from the Galisteo Basin, appeared in late Glaze E. A few rhyolite tuff tempered sherds were recovered, perhaps having come from the Bernalillo or Pajarito Plateau areas. There was only one late Glaze E sherd from Tonque. Other sherds with the Tonque latite temper may post-date Tonque itself, and be from the San Felipe area. Locally made Glaze E totaled less than 5%.

Differences in temper show that shouldered bowls of the 17th century found at Mound 7 came from Abo, Quarai, Pecos and possibly Paako.

Over 50% of Glaze F pottery was from Quarai or its neighboring villages. About 30% of Glaze F appears to have come from the Abo area. Warren suggests, however, that this may reflect only the ceramic typing methods rather than an actual decrease in trade, since only sherds positively classified as Kotyiti G-P, G/r, or G/y were included. Glaze E rim forms may have persisted

longer at Abo before replacement by Glaze F forms. About 2% of Glaze F pottery was made at Gran Quivira.

Warren has also analyzed temper inclusions in the Gran Quivira plain wares and white wares. Salinas Red ware, a plain red ware found in Mound 7, was sometimes locally made, with the balance being obtained from Abo or Quarai. Red wares produced at Gran Quivira totaled 34% of all red ware sherds, while less than 5% of glaze wares were locally made. Salinas Red ware made up less than 1% of the Mound 7 sherds, but was very popular at Abo and at the Quarai convento.

The Chupadero B/w made at Gran Quivira had a fairly consistent temper, with varying amounts of calcite, shale or clay pellets, and quartz sand. On occasion, small amounts of crushed sherd, igneous rock, or iron oxide grains were used. Fine grained quartz mica schist was used in less than 10%; these vessels may have been trade wares, but their origin is unknown. The temper in Chupadero B/w resembles much of the corrugated ware from Mound 7.

The Chupadero B/w pottery from Pueblo Colorado, located on the Cibola National Forest east of Gran Quivira, contained a crushed vitrified sherd temper that was also found in a number of Chupadero B/w sherds from Gran Quivira.

Tabira ware sherds contained a biotite felsite temper that occurs locally. The clay seems identical to Chupadero B/w. Tabira sherds from Pueblo Blanco, also located on the Cibola National Forest to the north of Pueblo Colorado, had similar temper, but seemed to have more calcite and clay pellets.

Early culinary wares at Gran Quivira had corrugated or ribbed exterior surfaces. They were tempered mainly with quartz mica schist, which contained coarse angular grains of quartz as well as fragments of silvery or brownish black mica in a fine-grained quartz matrix. The source for this is unknown, but may be near the site.

Among the later culinary wares, 74% were tempered with biotite felsite, 20% with coarse quartz and white feldspar grains. The latter may be intrusive, but the source is unknown.

#### Special Features:

At the west end of Mound 7 was a suite of rooms

which did not match the architecture of the rest of the room block. These rooms were larger and more formalized, and had interconnecting doorways. Hayes (1968) concluded that this was the convento of San Isidro Mission.

Between April and July of 1962, excavations were conducted by the National Park Service in the interior of San Buenaventura Church. Some intriguing anomalies were revealed. Although four surfaces were found in the sacristy, there was no evidence of a final, finished 17th century floor, nor any other indications that the church had been completed. The authors conclude (Voll and Richert 1962a) that church construction ceased shortly before work was to begin on the interior features of the church. There was no evidence of an altar. John Virgin in 1898, however, mentioned noting a paved limestone floor in the church (Virgin 1898).

The possibility of water control features at Gran Quivira has prompted speculation for decades. As early as 1835-36, David Wilson found what he reported as a concrete aqueduct which he traced eastward toward the Gallinas Mountains, and located water (Woodward 1934). In 1844, Josiah Gregg reported finding stone cisterns and the remains of aqueducts 8 or 10 miles in length, leading to the mountains. In addition, Gregg (1844) echoed the opinion that Gran Quivira was actually a wealthy Spanish mining town.

Subsequent investigations have, of course, failed to substantiate the presence of aqueducts and concrete canals. There are, however, features like ditches, bowl-shaped depressions, and pits lined with adobe around the site, and archeologists have debated the possibility that these had water control functions. Bandelier, in 1890, was of the opinion that these were indeed water control features. In 1945 Joseph Toulouse published a major paper on the Gran Quivira water system. In it he noted that historical sources indicate wells near the village as the main water source. Ranchers in the valley to the north of the site have indeed found pottery at depths of 20 to 40 feet while excavating wells themselves (Toulouse 1945:363). These sherds most likely were deposited during native well construction and use.

Richard Howard (1981) excavated an adobe-lined pit at the site which had been in use around 1300 A.D. He placed chunks of adobe from the pit in water, and noted that they dissolved in ten

minutes. Hayes (1981), in contrast, showed that with proper preparation some of these pits could have held water.

In 1959 Howard reported the results of a test trench cut across one of the supposed ditches at the site. There were no indications that it was intended for water flow. Instead a normal soil profile was observed, loose soil underlain within a few inches by bedrock. These "ditches" were too broad and shallow for water. In addition to their obvious porosity, they would have allowed wasteful evaporation.

Howard (1959) believes that the situation is much the same with the so-called "reservoirs." Many are on or near the tops of ridges, with little or no drainage into them. After a good rain they will hold only a few inches of standing water. Patrick Beckett has recently argued, quite convincingly, that many of these were limestone quarries, subsequently filled with soil and farmed (1981b:33-36).

#### Faunal Remains:

The faunal remains recovered from Gran Quivira have been analyzed by Charmion McKusick (1981). Among native fauna, bison, although numbering few individuals, yielded the greatest amount of usable meat in every period. Pronghorn antelope were second in each phase, followed by deer. In the Late phase, domesticated fauna provided more meat than native animals.

The grasslands were utilized most heavily to hunt fauna. They yielded bison, antelope, jackrabbit, kangaroo rat, pocket gopher, kit fox, and badger. The pinyon-juniper zone was used less intensively. Fauna originating here were mule deer, mountain lion, bobcat, porcupine, gray fox, rock squirrel, and wood rat.

McKusick notes that 66.1% of the turkeys had lived to an age of two years. This suggests use for feathers, rather than for meat.

In an interesting observation, McKusick notes that the prehistoric fauna from Mound 7 tended to be larger than the animals in the Southwest Archeological Center comparative collection. This may possibly have been due to calcium in their feed from the limestone formations of the area.

In an analysis of the domestic fauna of Gran

Quivira, Olsen (1976a, 1976b) recorded turkey, chicken, dog, horse, pig, cattle, sheep, and goats. The butchering techniques employed on the animals betray a lack of familiarity with them. The bones reveal many multiple hacks at joints where one skillful cut would have done the job. There were also heavy marks on small bones where a lighter cutting procedure would have sufficed.

#### Human Biology:

The human skeletal material recovered during the various excavations at Gran Quivira is one of the most intensively studied sets of osteological data in the Southwest. The major work on the series has been conducted by Erik Reed (1981) and by Christy Turner (1981) and his students at Arizona State University.

Reed (1981) reports what he considers to be an exceptional number of tall males in the series. Thirteen of forty adult males were taller than 169 cm (ca. 5'7"). He notes that this is characteristic of much of the eastern Pueblo margin. Female stature also favored the tall side. Some exceptionally short females, however, were included in the sample, so the mean is not different from other Puebloan populations. Reed feels that tall stature is a reflection of genetic influences from Plains populations.

Reed reports an infant mortality rate near 50% through age 4. Comparatively few deaths occurred between 5/6 years and age 18-20. Mortality continued to be low under 25 years, rising thereafter. Very few individuals lived beyond age 50; the majority of adult deaths occurred in the fourth decade. Reed placed only three or four individuals beyond age 50, although Turner's analysis disclosed eight persons in the 56-75 year age bracket found in the first two season's work at Mound 7.

Reed's belief that Plains genetic influence could be traced in the Gran Quivira skeletons has been disputed by El-Najjar (1981). He notes that, although the means of metrical observations of the Gran Quivira crania differ from the Southwest as a whole, the ranges are almost identical. With some individual exceptions, the Gran Quivira crania are essentially of the Southwest Plateau variety (El-Najjar 1981).

El-Najjar compared the Gran Quivira crania to other populations from the Southwest, and also tested for differences between the Middle and



Late phase populations of the site itself. The Early phase sample was too small for this study. He found the least difference between Gran Quivira and Pecos, and the greatest difference between Gran Quivira and Paako. This is somewhat surprising since Paako is the closer site. El-Najjar also found that both males and females of the Middle phase tended to have broader faces than did Late phase individuals. Other facial dimensions of both males and females also changed in the Late phase. El-Najjar attributes these changes to stress and malnutrition induced by Spanish occupation.

El-Najjar's findings of stress in the historic era are mirrored by Turner's (1981) analysis of life expectancy. Turner finds lowered life expectancy in the historic period. This is borne out by the figures in Table 9. Historic period populations apparently experienced a greater proportion of infant and childhood deaths, and had a lower proportion of older persons. These are the segments of a population most susceptible to death in stress episodes.

Table 9

Life Expectancy Indicators in Gran Quivira Population

|                                   | Prehistoric | Historic |
|-----------------------------------|-------------|----------|
| Proportion dying at age 6 or less | 27.8%       | 35.6%    |
| Proportion of old adults          | 17.8%       | 14.0%    |

In a significant observation, Turner (1981) and McWilliams (1981) note that there are no differences in the frequency of oral non-metric characteristics between the cremations and the inhumations. There is no reason to believe that these were not members of the same biological population. This discovery casts doubt on the notion of a migration from Zuni to the Salinas area (Hayes 1982:15). McWilliams (1981) also found that there was no statistical evidence for biological change through time in the population. This casts some doubt on the idea advanced by Mera (1940b) and Vivian (1964:152-154), that elements of the Jornada Mogollon population, from the south, joined Gran Quivira and other villages in the area after abandonment of their homeland in the Tularosa

Basin. Any such movement, around 1350-1400, should be reflected in genetic change in Middle phase skeletons.

Scott (1981) has analyzed the stature of the Gran Quivira people. He found an increase in stature among males from Early to Middle, then a decrease in the Late phase. Among females there was a marked increase in stature in Early to Middle, with no change in the Late phase.

Cheryl Swanson (1976) has studied dental pathologies in this population, and found that the frequency of individuals affected by such things as caries, alveolar abscesses, and tooth loss decreased from the Early to the Middle phase, and then increased in the Late period. The frequency of periodontal disease also increased from the Early to the Late periods.

Swanson has postulated a sequence of events to account for these observations. She suggests that during the Early period populations migrated into the area and attempted to establish a new agricultural base. The resulting stress led to a high rate of dental pathologies. By the Middle phase trade networks to the Plains were established, bringing greater access to faunal resources, and enhancing nutritional intake and general health. In the Late phase the combined stresses of Spanish occupation, drought, cessation of trade, and Apache raids combined to bring about nutritional impairment, lowered resistance to disease, and ultimately increased dental pathologies. Swanson's interpretations in this regard follow those of Harris (1972:281-282).

Although this reconstruction is intriguing, it is not entirely plausible and does not correspond with known facts. To begin with, there is no evidence that Gran Quivira was settled by a newly immigrant population. To the contrary, the area was occupied prior to 1300 A.D. by pithouse and jacal dwelling populations who most likely aggregated to form the Gran Quivira community. The notion that the potential for trade with Plains populations was suddenly "discovered" in the Middle phase, and that this led to enhanced nutritional intake, is difficult to accept. This idea ignores the likelihood that local populations had been interacting with Plains dwellers for some time, and completely disregards the potential of local faunal resources in the diet.

One of the most significant studies of the Gran Quivira skeletal material is Harris' (1972)



analysis of growth arrest lines in femora. Growth arrest lines (Harris lines, transverse lines) occur in growing children as a result of episodes of illness or malnutrition of more than a few weeks duration (Harris 1972:2). They are observable in long bones when these bones are x-rayed. Harris standardized his results by restricting the analysis to the femur (upper leg bone).

The number of femora suitable for analysis was 28 from the Early phase, 74 from the Middle, and 100 from the Late. All of his comparative analyses were standardized by using only the left femur. Of the femora x-rayed (n=203), 33% were female and 22.2% male, while the remaining 44.8% could not be sexed, primarily due to immaturity.

Pooling ages and sexes, it appears that the Early phase population experienced relatively harsh health conditions (mean of 1.41 Harris lines per femur), the Middle phase population was healthier (0.90), while there was slight additional improvement in the Late phase (0.80).

Different segments of the population display varying frequencies of transverse lines. Infants less than three years display an apparent decrease through time in the number of Harris lines. This, however, may not indicate improvement in health, but exactly the opposite. Infants apparently came to experience a higher death rate, so that they were removed from the population before many growth arrest lines could form.

Members of the 21-35 year age grade experienced a decrease in the number of lines Early to Middle, then an increase in the Late phase. The Early sample size here, though, was only three, so this result is not to be relied upon.

In the 36-55 year age grade a different pattern can be seen. Lines decrease Early to Late, but line remnants increase Early to Middle, then decrease Late. Harris (1972:227) infers from this a decrease in relative morbidity during the Late phase.

Turning to male-female comparisons, with ages pooled, Harris notes that the relative morbidity of males was higher in the Early phase, but that this situation was reversed in the Middle and Late periods. When the sexes are considered individually with ages pooled, there was a general increase in morbidity through time.

Harris (1972:233) attributes this to such factors as disease and Spanish domination.

Pooling all ages and both sexes, and counting both transverse lines and line remnants, Harris (1972:239) infers that the population as a whole experienced a decrease in morbidity from the Early to the Middle phases, with little change (a slight decrease) in the Late phase.

In comparing the Gran Quivira data to other similar studies some surprising results emerged. The Gran Quivira femora contain a mean of 0.82 Harris lines per bone. This is close to the lowest recorded archeological population, which showed 0.80. In addition, the degree of change between the Early and Late phases is much lower than temporal change in some other skeletal series. These observations combine to reinforce an observation made by Christy Turner (personal communication): that the Gran Quivira population was a rather healthy one, at least when compared against some other areas of the Southwest (cf. El-Najjar et al. 1976).

#### Gran Quivira Survey:

In a survey of the Gran Quivira unit, Patrick Beckett recorded numerous pithouses, as well as prehistoric dams, terraces, a small mound, rock art, roads, artifact scatters, and historic materials (1981b). He puts forward a sound argument that the many stone discs found at the site were used to cover the mouths of Chupadero B/w jars, possibly to prevent evaporation of water stored therein. The mean diameter of these discs corresponds quite closely to the mean diameter of the necks of recorded Chupadero B/w jars from the site (Beckett 1981a, 1981b:84-89).

#### Pueblo Pardo

Pueblo Pardo is a moderate-sized masonry site on Chupadera Mesa, located a few miles south of Gran Quivira. It was noted by Bandelier (1892).

In the spring of 1941, Washington and Jefferson College undertook excavations at the site. Joseph Toulouse, custodian at Gran Quivira, directed the work, assisted by Robert Stephenson. Their report on the excavations was prepared shortly thereafter, updated slightly in the intervening years, and published in 1960 (Toulouse and Stephenson 1960).

The occupation in the excavated portion of Pueblo

Pardo overlaps with that of Gran Quivira. Ceramics indicate occupation into the historic period. Several ceramic types were found which were also recovered from the mission of San Gregorio de Abo, including Red "Brick" ware, Salinas Red ware (both of which date post-1630), Kotiyiti Glaze-Polychrome, and Tabira B/w. These indicate an occupation in the first third of the 17th century. But late Abo ceramics were not found at Pueblo Pardo, nor were European items. This may be due to the small area examined, but it may also mean that the site was in the final stages of abandonment in the first third of the 17th century. There are no known Spanish records of the site, probably because it was too small and was considered part of Gran Quivira (Toulouse and Stephenson 1960:3).

Fourteen rooms and one kiva were excavated. The recovered ceramic inventory included Chupadero B/w, Casa Colorado B/w, Tabira B/w and Plain, glaze wares, and both brown and gray utility wares. Nearly all glazes were present, but only A and F were found in any significant frequency. Toulouse and Stephenson (1960:3) estimate a 400 year span of occupation for the site.

Based on their excavations at Pueblo Pardo, and a surface reconnaissance of the area, Toulouse and Stephenson (1960:40) proposed a cultural/temporal sequence for the area. Starting from the most recent manifestations, it includes the following periods: Historic Puebloan (Salinas Focus), Proto-Historic Puebloan (Pueblo Pardo Focus), Late Prehistoric Puebloan (Pueblo Colorado Focus [actually named not after Pueblo Colorado, but after nearby LA 2091]), Middle Prehistoric Puebloan (Gran Quivira Focus), Early-Middle Prehistoric Puebloan (Arroyo Seco Focus), and Early-Middle Prehistoric Brown ware (Claunch Focus). The ceramic characteristics of these periods are shown in Table 10. Toulouse and Stephenson (1960:41) believe that the Claunch and Arroyo Seco foci were contemporaneous.

The single season of work at Pueblo Pardo resulted in discovery of 36 burials (Toulouse and Stephenson 1960:34-35). Of these 7 were cremations, 17 were flexed inhumations, 8 were extended inhumations, and 4 were inhumations that were too fragmentary to ascertain burial position. Cremations were all buried in simple pits, although in four cases these were cut down into bedrock. Some of both the extended and the flexed inhumations were placed in stone-lined pits.

The mortuary system from Pueblo Pardo is generally similar to that of Mound 7 at Gran Quivira, but some differences are apparent. The more elaborate, stone-lined graves were not used for cremations. This would suggest that, unlike Gran Quivira, whatever status is represented by these graves did not cross-cut the major cremation/inhumation dichotomy. Furthermore, there appears to have been a higher proportion of extended inhumations at Pueblo Pardo than at Gran Quivira, and as noted, some of these were placed in stone-lined graves. Provided that these differences are not merely errors induced by a small sample, it would appear that there may have been structural differences between Gran Quivira and Pueblo Pardo societies. Toulouse and Stephenson (1960:34) note that these types of burial do not vary between the earlier and the later aspects of their excavated material.

#### The Salinas Province

Elsewhere in the Salinas Province archeological work in the late prehistoric period has been much less intense. Only the sites of Abo and Quarai have received much attention. They will be discussed shortly.

East of Gran Quivira, on the Cibola National Forest, there are a number of late prehistoric sites recorded in the files of the Laboratory of Anthropology. LA 2091, located on top of a mesa southeast of Pueblo Colorado, has yielded Glazes A and B, and may date in the early 15th century. Pueblo Colorado itself was initially settled around 1200, but the major occupation was between 1325 and 1625. The site contains over 20 room blocks, but these were probably not all contemporaneous (Map 12).

Pueblo Blanco, known to the Spanish as Tabira, is located a few miles north of Pueblo Colorado (Map 10). It was initially settled around 1200, was at least intermittently occupied during the 13th and 14th centuries, and increased in size and population in the 15th through 17th centuries.

The existence of a Spanish mission at Pueblo Blanco was recognized by Richard Howard (1959b). This church was subsequently excavated by Stanley Stubbs (1959). Prior to Stubbs' work, illicit excavations had been conducted in a historic era midden at the site (Cress 1957). Some pothunting had also occurred in the church, but the main features had been missed. Several burials in the Campo Santo had, however, been disturbed.

Table 10

Ceramic Characteristics of Temporal  
Periods in The Pueblo Pardo Area\*

| Period                                                      | Ceramics                                                                                                                                                                   |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Historic Puebloan<br>Salinas Focus                          | Tabira B/w<br>Tabira Polychrome<br>Kotyiti Glaze-Polychrome<br>Salinas Red ware<br>Mexican Majolica<br>Plain Smoothed Utility<br>Ware                                      |
| Proto-Historic Puebloan<br>Pueblo Pardo Focus               | Tabira B/w<br>Tabira Plain<br>Chupadero B/w<br>Kotyiti Glaze-Polychrome<br>San Lazaro Glaze-Poly-<br>chrome<br>Jornada Brown<br>Plain Smoothed Utility<br>Ware             |
| Late Prehistoric<br>Puebloan<br>Pueblo Colorado Focus       | Chupadero B/w<br>Tabira B/w<br>Agua Fria G/r<br>Cieneguilla G/y<br>Largo Glaze Polychrome<br>Little Colorado Poly-<br>chrome<br>Jornada Brown<br>Indented Blind Corrugated |
| Middle Prehistoric<br>Puebloan<br>Gran Quivira Focus        | Chupadero B/w<br>Agua Fria G/r<br>San Clemente Glaze-Poly-<br>chrome<br>Cieneguilla G/y<br>Jornada Brown<br>Indented Blind Corrugated                                      |
| Early-Middle Pre-<br>historic Puebloan<br>Arroyo Seco Focus | Chupadero B/w<br>St. Johns Polychrome (?)<br>Corrugated Utility Ware                                                                                                       |
| Early-Middle Pre-<br>historic Brownware<br>Claunch Focus    | Jornada Brown<br>Los Lunas Smudged<br>San Francisco Red<br>Chupadero B/w<br>Indented Corrugated<br>Utility                                                                 |

\* after Toulouse and Stephenson (1960:40).

The floor plan of the mission church was typical

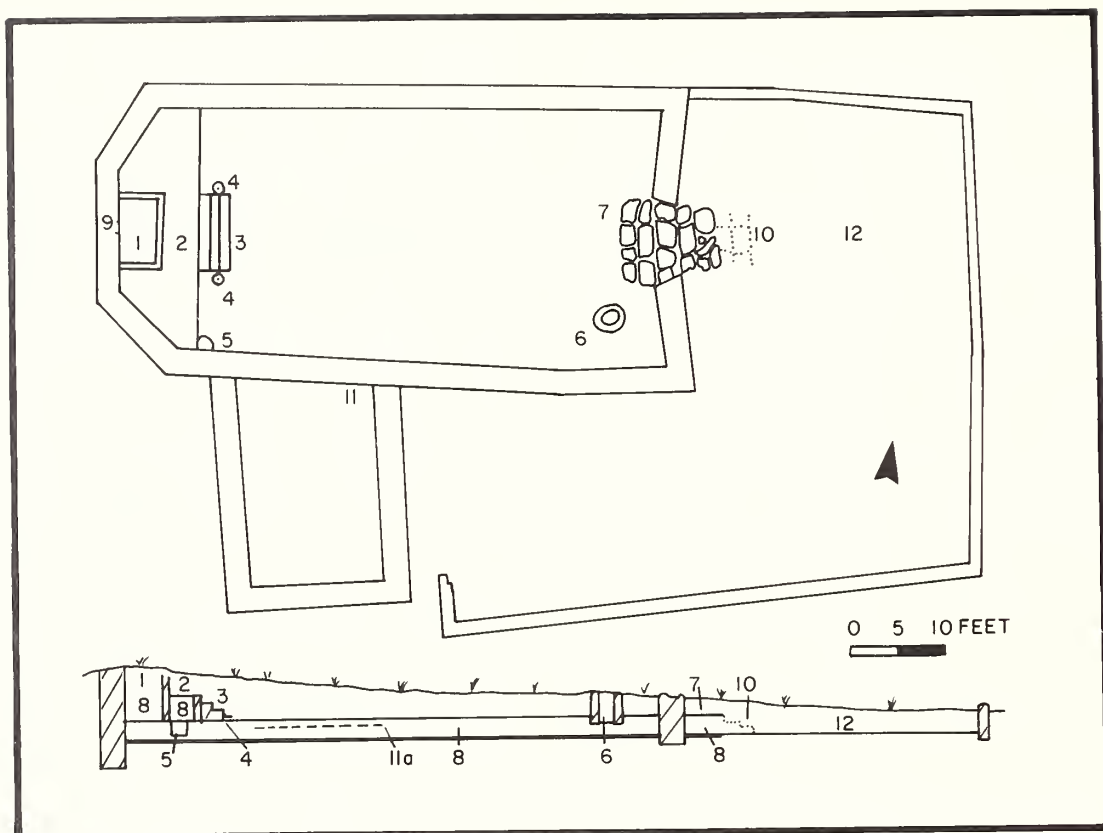
of the earliest mission period (Map 9). Two periods of construction were noted. The earliest, around 1629, had a simple floor plan and walls, with no added features. A period of abandonment ensued, with considerable wall breakdown. Around 1659 fill was laid over the original floor to a depth of two feet and the walls rebuilt. Five or six layers of plaster were evident on the walls. There were some indications of a choir loft. The church may have been deliberately abandoned and wrecked, with the vigas removed (Stubbs 1959:168).

On the east side of the Estancia Basin, in the Pintada locality, a number of Pueblo III and Pueblo IV sites have been recorded. None of these has received any systematic investigation.

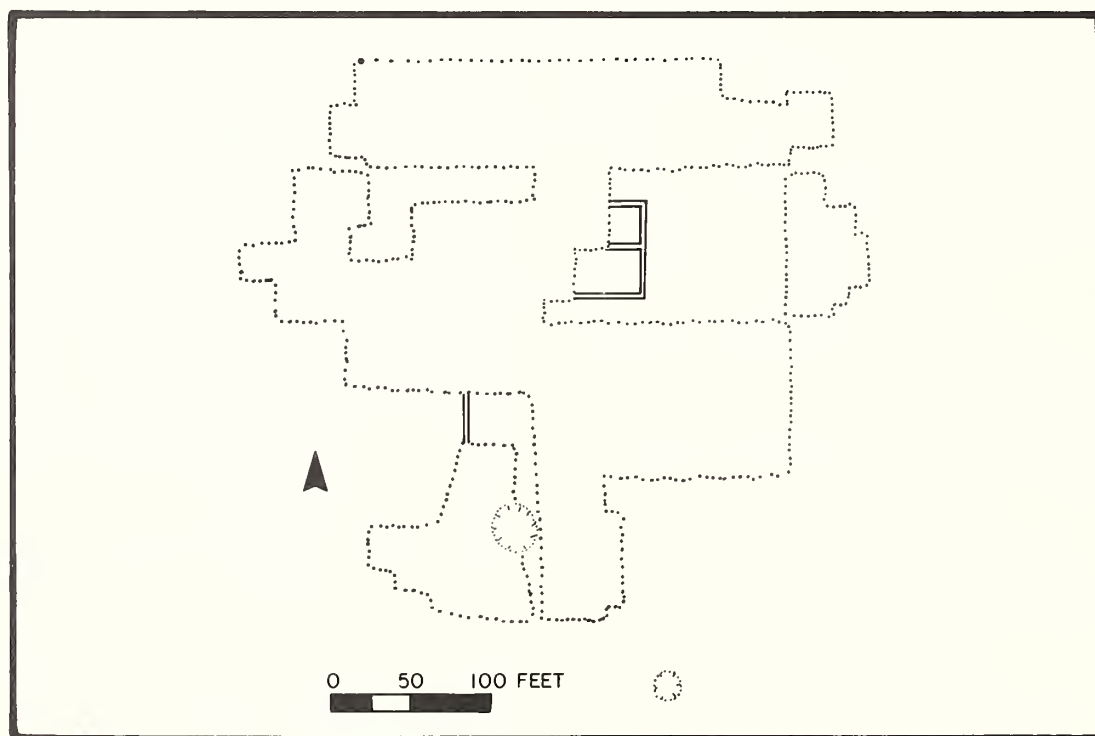
A number of excavation and stabilization projects have been undertaken at Quarai. The School of American Archaeology initiated work there in 1913, directed by Edgar L. Hewett (1917). The South Mound (House A) was excavated, and 22 skeletons removed (Hurt n.d.:45). Excavation and stabilization work at the site resumed in the 1930s and 1940s (Senter 1934; Ely 1935; Baker 1936; Hurt 1985; Hurt and Dick 1946). While doing repair work in 1959, Stanley Stubbs (1959) discovered a possibly older church similar to the one at Tabira. Stabilization of La Purisima Concepcion church was underway when research for this overview started.

Ele Baker (1936) conducted stratigraphic tests at three locations around the site: the monastery and mission, the West Mound plaza, and the South Mound. The South Mound test yielded black-on-white wares, a fair amount of Glaze A, glaze-on-red, Arenal Glaze-Polychrome, and a few Glaze B and Zuni glazes. The West Mound test contained later glaze wares with E and F dominant among painted wares. Five sherds of Glaze C were found, no Glaze D, and only a few black-on-white sherds. Baker concludes that the earliest occupation of Quarai was in the late Pueblo III period. The relative lack of Glaze C and D has been taken by some to indicate a hiatus in occupation, but the number of tests was too small to substantiate this.

In January, 1939, a general landscaping and repair project was begun at Quarai. The Pueblo walls adjacent to the mission on the west were outlined (Hurt n.d., 1985). Two, and possibly three, stages of construction were discovered in the southeast section of the monastery. Stone

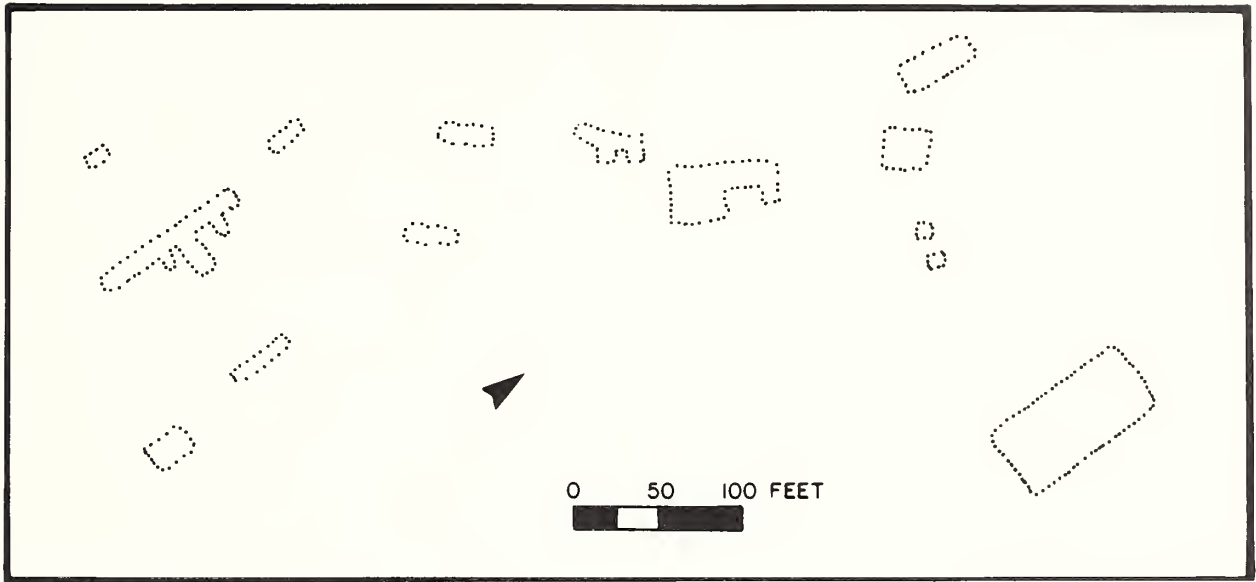


Map 9. Tabira Mission (after Stubbs 1959:166).

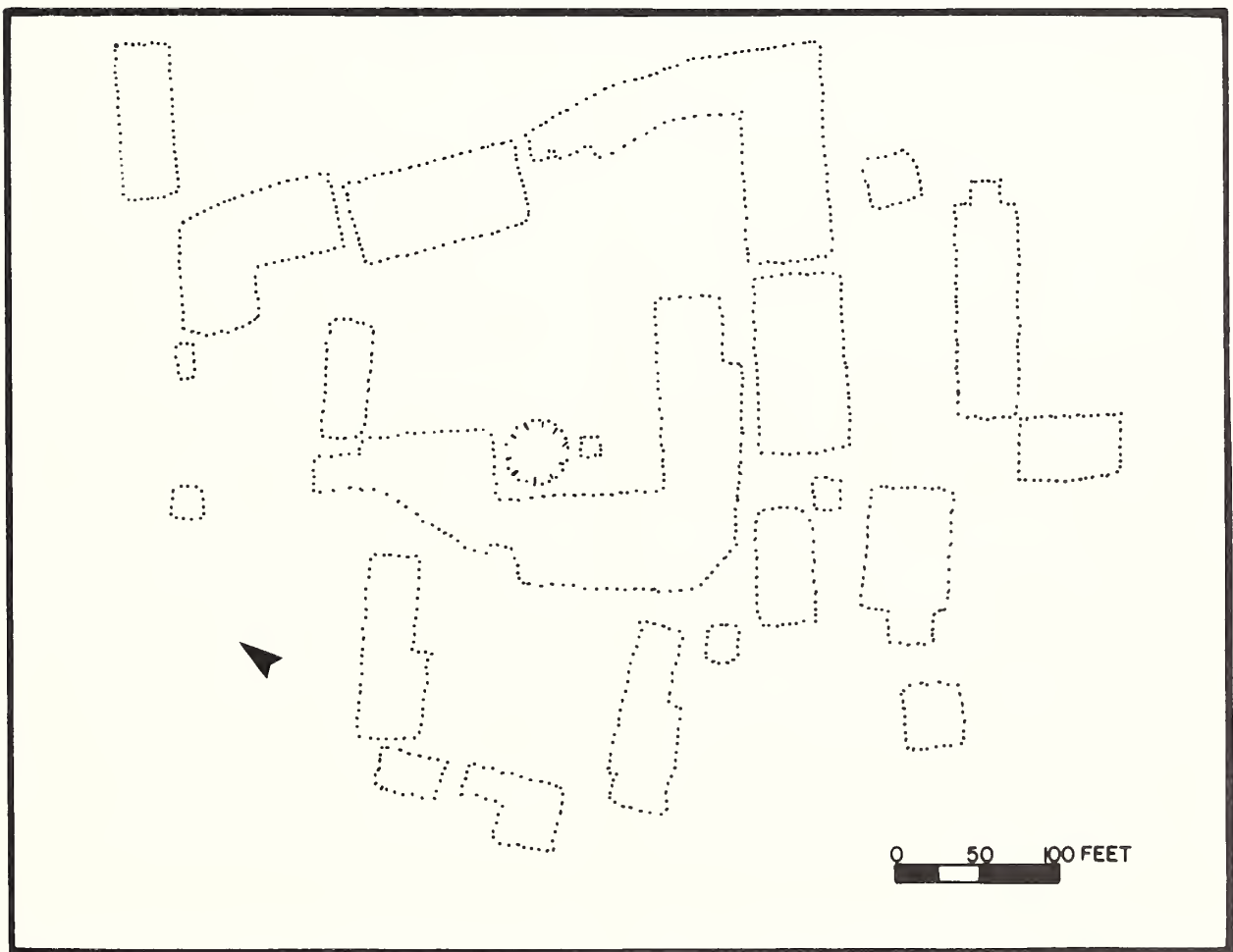


Map 10. Pueblo Blanco (LA 51) [after Mera 1940b:298].





Map 11. Late Thirteenth Century Village (LA 789) [after Mera 1940b:293].



Map 12. Pueblo Colorado (LA 476) [after Mera 1940b: 295].

projectile points, grinding implements, and iron arrow points were recovered from this area. Majolica and porcelain sherds, in association with Glaze F, were also found. One piece of Chinese porcelain was noted.

In the parts of Quarai he investigated, Hurt (1985) discerned three phases of occupation. Period I ceramic types were primarily Corona Corrugated, Chupadero and Casa Colorado B/w, Agua Fria G/r, Galisteo B/w, Cieneguilla G/y, and Arenal G-P. The estimated duration for this period is from 1350 - 1425 (or 1450) A.D. It is represented in the south mound, labeled Mound A, and perhaps elsewhere in fill and midden. Mortuary practices in Period I included burial in flexed to semi-flexed positions with no standard orientation. The deceased were placed in refuse mounds, in house fill or below house floors, and had few grave associations. The presence of small amounts of the twelfth century pottery types Tularosa B/w and St. Johns Polychrome raises the possibility of earlier occupation.

Period II at Quarai, ca. 1450 - 1545 A.D., is very poorly known. No residential areas dating to this time have been investigated, and one could almost conclude that Quarai was unoccupied between the time when Mound A was abandoned (ca. 1425) and the time when the Glaze E and F pottery types were introduced. There are, however, sherds of Glazes B, C, and D scattered throughout the site which indicate occupation during this period. Period II is characterized by a decrease in Chupadero/Casa Colorado B/w, Glaze A, and Corona Corrugated, and by an increase in Corona Plain. Glazes B, C, and D, and Santa Fe and Galisteo B/w as trade wares, are found in small numbers.

Hurt dates the structural remains he excavated in Mounds F, G, H, I, and J to the Glaze F ceramic period, and accordingly places his Period III from ca. 1615/1625 to abandonment (ca. 1676). In Period III samples that Hurt excavated several ceramic types decreased in frequency, including Agua Fria G/r, Corona Corrugated and Plain, Chupadero/Casa Colorado B/w, and Glaze E. Salinas Red, on the other hand, increased slightly, while Glaze F increased markedly. Kapo Gray, a trade ware from the Santa Fe area, was introduced. Hurt feels that Tabira ware, although not defined at the time of his excavations, occurred in low frequency at Quarai and was imported from one or more of the Salinas pueblos near Chupadera Mesa. Several construction episodes were evident among structures occupied during Period III.

Dendrochronological assays indicated that the main church, La Purisima Concepcion, was built prior to 1630 A.D. Hurt is unable to confirm Stubbs' (1959) belief that the smaller, nearby chapel was constructed prior to this time.

Mounds F, G, H, I, and J at Quarai revealed three types of masonry (Hurt n.d.). Type A masonry was confined to Mound J. It consisted of rubble core faced with linear slabs of sandstone. Some of these walls resembled masonry at the mission, and were no doubt contemporaneous. Type B masonry was fine sandstone slabs, without a rubble core, on a foundation of upright sandstone slabs. It was dominant in the 1939 project area. Type C consisted of fine linear slabs not laid on a foundation of upright slabs. Hurt (n.d.) acknowledges that there may have been no temporal differences between these styles.

The mission of San Gregorio de Abo was excavated and stabilized under the direction of Joseph Toulouse in 1938 and 1939. The report on this work was published by Toulouse in 1949.

Trade wares recovered from the excavations included pottery from Hopi, Zuni, and Acoma. Northern varieties also occurred, such as Tewa Polychrome, Posuge Red ware, and Puname Polychrome. Toulouse (1949:14) believes that vessels from late in the Chupadero series reveal imitation of these northern wares, as in a conventionalized feather design.

A few sherds of Chupadero B/w were recovered, along with the possibly derivative Tabira B/w, Polychrome, and Plain. A Tabira B/w chalice was a notable find. Plates and cups of the Tabira Plain variety were fashioned in imitation of Chinese porcelains and Mexican majolica (Toulouse 1957:5). Non-aboriginal ceramics included Mexican Majolica and Chinese porcelain. Toulouse (1949:17) believes that the Abo glaze wares cannot be accommodated within either Kidder's or Mera's classifications, but Reed (1940) reports all six conventional glaze wares from the site.

Fauna recovered from the excavations at Abo included wood rat, lynx, ground squirrel, cottontail rabbit, mule deer, bison, western red-tailed hawk, pig, sheep, and goat.

Floral remains from San Gregorio de Abo were studied by Volney Jones (1949). Four samples were sent to him for identification, two from turkey pens and two from adobe bricks. The bricks

contained almost nothing. The pen material was turkey dung, and it was very productive of floral remains. A peach pit was found, as were remains of watermelon and muskmelon, coriander, grape, chili pepper, plum, pumpkin, corn, pinyon nuts, yucca, prickly pear, cholla, amaranth, and juniper seeds. Considering the floral and faunal remains from Abo and Gran Quivira, a picture emerges of a historic era diet which included primarily domesticated fauna, supplemented by native species, and primarily native flora, supplemented by introduced species. Since the data which underlay this observation come from both native (Mound 7) and Spanish (San Gregorio de Abo) occupation areas, such a diet may well have characterized both groups.

Toulouse's (1949) work at Abo had indicated that an earlier structure lies beneath the convento standing today. This was confirmed in 1984 when National Park Service archeologists James Trott and Susan Kreger excavated a drainage pipe trench for the convento. They found several fragmentary walls under the present floor.

Based on these finds, Park Service historian James Ivey developed a plan for limited excavations to test for the existence of an earlier church (Ivey n.d.a). When these excavations were conducted in March 1987, wall remnants of an earlier church were indeed found (Kailer 1987). Ivey believes that this church was begun by Fray Francisco Fonte in 1623, and completed about 1627. When Fray Acevedo became guardian of Abo about 1640 he began planning the larger church that is seen today. This was built economically, by using much of the older church, and enlarging it where necessary (Ivey n.d.b).

In 1944, Bertha Dutton tested the native portion of Abo. Some of this work has been recently reported (Dutton 1981), while some is still forthcoming. Excavating in both rooms and refuse, she found the full range of glaze wares from A through F, Chupadero and Tabira wares, and various plain wares. The last included Manzano Brick ware (historic Casitas wares?) (cf. Dutton 1981:180; Dick 1968), Salinas Red, Corona Plain, Corona Corrugated, and Los Lunas Smudged. Dutton also notes twenty corrugated culinary sherds which she places between 1100 and 1300 (1981:189). She suggests occupation at Abo as early as 1150 A.D. (Dutton 1981:193).

The Abo area displays some of the most ornate and well executed rock art of the late period Rio

Grande style, including masks and anthropomorphic representations (Schaafsma 1972:131-135). The masks in particular are similar to the Jornada rock art style. The Rio Grande style appears in the Rio Grande Valley from San Marcial to the Pajarito Plateau (Schaafsma 1972:141-144). Major representations in and near the overview area occur at the Bureau of Land Management's Arroyo del Tajo pictograph site (BLM 1981; Schaafsma 1980) (Fig. 4) and near Los Lunas (Durham 1955; Schaafsma 1968).

Schaafsma and Schaafsma (1974) believe that the Rio Grande rock art style was iconographic, and its spread after 1300 marks the adoption of a new ceremonial pattern, specifically the katchina cult. They suggest that population aggregation after 1150 in the Anasazi area, with the formation of larger villages of several descent groups, required the development of new means of village integration. The katchina cult, along with village sodalities, met this need. The spread of Jornada style rock art into the Anasazi area after 1300 documents the adoption of these new integrative institutions.

The Schaafsmas' inferences about the spread of the Jornada style, and the cultural processes they associate with it, are plausible. They do not, though, consider the question of whether this style of rock art served a function in the Jornada area similar to that which they postulate for the Anasazi. If so, this might imply that complex villages existed earlier in the Jornada area, an improbable point.

#### Notes on Salinas Province Ceramics

In a pioneering study which preceded Warren's (1981) research, Shepard (1942) analyzed temper inclusions in glaze ceramics of the Salinas Province, the northern Jornada del Muerto, and the Middle Rio Grande Valley. She found that among the Salinas pueblos the east-central and northernmost sites show strong ties with the Galisteo Basin. There is a sharp contrast between the Jornada del Muerto on the one hand, and the Salinas, Los Lunas, and lower Rio Grande areas on the other, in terms of the percentage of sherd tempered Glaze A red wares. The latter areas consistently display 33-35% sherd temper, contrasting with about 60% in the former.

The non-aboriginal ceramics of the Salinas Province have been described by Hurt and Dick (1946), Caywood (1950), Plowden (1958), Dick



Figure 4. Terrestrial photogrammetry of a portion of the Arroyo del Tajo pictograph site.

(1968), and Goggin (1968). Among the ceramics recovered from Quarai, Plowden (1959:213, 217) lists Fig Springs Polychrome (1615-1650), Abo Polychrome (1650-1700), San Luis Blue-on-white, (1635-1700), Tallahassee Blue-on-white, Puebla Blue-on-white (1700- ?), and unclassified polychromes, blue-on-white wares, and green wares. Goggin (1968:171) notes that Abo Polychrome was probably made in Puebla, Mexico. Ceramics found at Abo include Abo Polychrome and San Luis Blue-on-white (Plowden 1958:217).

Plain wares found at Quarai include Manzano Coarse ware, Manzano Thin Red-on-buff, Manzano Burnished Black ware, and Manzano Micaceous (Hurt and Dick 1946:281-283). Dick renamed Manzano Coarse as "Carnue Plain" in his later paper (1968:80-84), and assigned a date of 1700-1895, Manzano Thin Red-on-buff became Casitas Red-on-brown (pre-1672 to 1890), and Manzano Burnished Black became Kapo Black (1700 to present). These ceramics clearly post-date the native occupation of the site. They were all stratigraphically late in the deposits,

and were apparently intrusive from the Spanish resettlement of the locale.

#### Village Organization

In the southeastern portion of the Salinas Province, Mera (1940b) has documented a contrast in late prehistoric village organization. On the one hand are compact and tightly organized structures, seemingly built with some level of integration and planning. Pueblo Blanco (Map 10) and Pueblo Pardo illustrate such settlements. At the opposite extreme are sites such as Pueblo Colorado (Map 12), Gran Quivira, and LA 572 which lack this compact village form, and which consist of groups of room blocks clustered in an area with varying degrees of formal arrangement.

Mera draws some provocative inferences from this dichotomy. For example, he notes the similarity in village plan between the later group of pueblos, those lacking compact organization, and earlier, late 13th century brown ware villages



such as LA 789 (Map 11). Mera proposes that, with the abandonment of the Jornada Mogollon area around 1350 - 1400 A.D., populations from that region established residence in the southeastern Salinas Province. There they built large settlements of dispersed, non-contiguous room blocks in the manner of their former villages. They impinged upon resident populations who were building more compact structures. Mera believes that these newcomers were the Jumanos referred to by the Spanish, while the resident population should be classified as Tompiros.

Similar interpretations, based upon Mera's ideas, were advanced by Vivian (1964) to account for the late adoption of some Anasazi technological features in the Gran Quivira area. Vivian believed that the "Mogollon" Jumanos constituted a distinct faction in the Gran Quivira community, contributing to a lack of social cohesion, as well as to the delayed technological imitation of the Anasazi.

While it is evident that there were probably organizational differences between such sites as Pueblo Blanco and Pueblo Colorado, this is neither a sufficient nor a logical basis for reaching the conclusion that ethnically and linguistically different populations occupied these two types of village. Indeed, as noted, the lack of biological indicators of a populations intrusion in the Gran Quivira skeletons (McWilliam 1981) argues against the idea that Jornada Mogollon populations moved into this area following abandonment of the Tularosa Basin. This topic will be discussed in more detail in the next chapter.

As discussed in the History chapter of this overview, the pueblos of the Salinas Province were abandoned during the decade of the 1670s. The abandonment brought a major hiatus in 11,000 years of native occupation, although Apache use of the area probably continued.

## SYNTHESIS OF THE EARLY NATIVE OCCUPATION

### Hunters and Gatherers

Although substantial PaleoIndian and Archaic occupations of the riverine and Jornada del Muerto portions of the overview area have been documented, it is possible to synthesize these occupations in any detail only for the Estancia Basin.

The overview area figures prominently in the

question of early occupation of North America. The well known, and controversial, Sandia remains have been found in the Estancia Basin at the Lucy site, and at other locations. The finds at the Lucy site were probably associated with mammoth remains, and Roosa (1968:35) believes that a Sandia mammoth kill occurred at the edge of a pond. Both Roosa (1968) and Harbour (1956) assign a late Pleistocene age to the Sandia remains at Lucy. Roosa suggests that Sandia may have been the same age as, or older than, Clovis, while Lyons (1969:27) believes that the Sandia complex dates to around 20,000 B.P. The stratigraphy of the Lucy site was not suitable for evaluating the temporal position of Sandia. The original discoveries at Sandia Cave, reported by Frank Hibben (1937, 1941) have become so controversial that serious doubts exist about the reported finds (Stevens and Agogino 1975). More recent excavations in the cave by C. Vance Haynes and George Agogino have not yet been reported.

In his survey of the Estancia Basin, Lyons (1969:87-104) recorded two sites that he feels may have pre-dated not only Clovis, but even Sandia. These sites were both found on low hills capped by outcrops of Glorieta sandstone. A large number of quartzite implements was found on each site. These tools extended down the two hills to the level where the shoreline of Lake Estancia existed prior to 19,000 years ago. And although at one locality quartzite outcrops occurred farther down the hill, only outcrops higher than the shoreline were used for making tools, suggesting that Lake Estancia prevented access to the lower ones. Lyons accordingly postulates a pre-19,000 B.P. age for these remains, and terms the manifestation the "Estancia Complex."

A diversity of tool forms were found on the two "Estancia Complex" sites, perhaps representing butchering and associated activities, plant food processing, and wood working. It is likely that these hills served as quarry sources which were repeatedly utilized for whatever activities groups happened to pursue in the area at any time. If these sites served as special activity loci, the remains found at them can serve to characterize only a portion of the technological repertoire of these possibly early populations.

The question of early, pre-Clovis occupation in the Estancia Basin can only be resolved by obtaining firm radiometric dates, or finding appropriate stratigraphic sequences. Since it is

difficult to predict from surface observations whether an archeological site might contain these kinds of data, designing a research program to test the chronological position of the Sandia and Estancia complexes is essentially impossible. It may be, then, in terms of empirical verification, that arguments over the temporal positions of these complexes are futile. It is, in part, for this reason that I have argued in the preceding chapter that research should concentrate instead on the possible functions of the Sandia "points." Lyons reports wear, polish, and striations on Sandia points that indicate their use as knives as well as projectiles (1969:118). Roosa (1968) suggests that Type 1 Sandia points were knives, while Type 2 were projectile tips. Stevens and Agogino (1975:46) have proposed that the points found in Sandia Cave were used for mining ochre.

If the Sandia points represent a style, presumably employed for a short duration, then it may be worthwhile to pursue the possibility that they held a distinctive position in PaleoIndian chronology. But if they were a generalized, multi-purpose implement, designed for function rather than style, then the likelihood is reduced that they might serve as temporal indicators. If so, the question of the Sandia chronology and controversy would become both less crucial and less solvable.

In his survey of the Estancia Basin, Lyons (1969) found 6 Clovis sites, 10 Folsom, and 15 Plano. These sites concentrated at the northern and southern ends of the basin, where access to adjacent regions was easiest. Lyons (1969:153-156) estimates that the Folsom occupation was largest, followed by Clovis and Plano.

Cynthia Irwin-Williams (n.d.) has suggested that a pattern of continual moisture decrease following Folsom times led to decreased availability of megafauna, and to changes in the human occupancy of western New Mexico. She postulates reduced occupation during Agate Basin, sparse or intermittent occupation between the period 7500 and 6600 B.C., and reoccupation during Cody times (6600 - 6000 B.C.).

There are, however, consistent indications of human occupation in and near the overview area between Folsom and Cody times. Judge places the Belen complex of the Middle Rio Grande Valley in this era (1973:69-72). In the study area itself Plainview, Agate Basin, and Hell Gap points have been found. While it is possible that these do occur in lower frequency than fluted points, the

conclusion that this reflects depopulation of the area may not be warranted.

Irwin-Williams bases her interpretation on the notion that PaleoIndian subsistence strategies were focal ones, concentrated on big game (mammoth during Clovis times, Bison antiquus thereafter). It is doubtful, though, if such a focal economy was indeed practiced. A diversified subsistence is the common pattern among ethnographic hunters and gatherers, except in the Arctic where food alternatives are few. A focal economy is always risky, since depletion of the major resource is a constant threat. It is not likely that PaleoIndians followed a subsistence strategy so anomalous, and so contrary to their own self-interest.

In an earlier discussion of this problem (Tainter and Gillio 1980:39-41), Judge's (1973) survey data from the Middle Rio Grande Valley were used to roughly estimate the portion of the subsistence base that could have come from megafauna. Even using the most generous estimates, it was apparent that megafauna could have accounted for only a small fraction of the total diet.

It seems more likely that PaleoIndians in western New Mexico pursued a mixed subsistence pattern, relying primarily on plant foods and smaller game, and supplementing their diet with megafauna only on rare occasions. This is a view with which both Roosa (1968:195-196, 233, 261-262) and Lyons (1969:172) are in agreement. If so, then during times when megafauna were not available, this would have amounted to the loss of only a minor resource, one easily adjusted for. If PaleoIndian projectile points were more frequently used in hunting megafauna, then during periods of megafaunal depletion, when such points were not being employed so regularly, the archeological record might give the appearance of depopulation. Scholars who study PaleoIndian occupation and subsistence in the overview area, and elsewhere, should bear in mind this potential bias in the archeological record.

Similar considerations apply to the transition between PaleoIndian and Archaic times. It is believed by Irwin-Williams (n.d.) that with the disappearance of the Cody complex (ca. 6000 B.C.) there was an occupational hiatus in west-central New Mexico prior to the appearance of the Jay populations (ca. 5500 B.C.). She bases this interpretation on two factors: (1) the presumed withdrawal of Cody populations to the Plains following the disappearance of megafauna, and (2)

the lack of any technological continuity between Cody and Jay. Irwin-Williams sees technological similarities between Jay and the remains of San Dieguito/Lake Mojave in California and western Arizona, and postulates population movements from the west into New Mexico.

As with the question of depopulation between Folsom and Cody, the appearance of population withdrawal between Cody and Jay may only be a skewed reflection of the fact that diagnostic PaleoIndian points were used only in a minor portion of the subsistence round. The apparent lack of technological continuity between Cody and Jay may also stem from this bias, and in any event is not a reliable indicator of population replacement. The assumption that hunters and gatherers do not make rapid, pronounced cultural changes is a shaky basis for such an important conclusion.

The overview area has produced Archaic remains that pertain to the nature of the transition from PaleoIndian to Archaic culture, and that raise additional questions. The dating of J points is obviously pertinent. Lyons (1969:68) classifies J as PaleoIndian, while Roosa (1968:69) discerns two varieties of J points at the Lucy site: wide and narrow. He finds the former to be similar to Agate Basin and Hell Gap, and the latter to Pinto Basin points. Irwin-Williams (1973), in contrast, has assigned J points exclusively to the initial Archaic period, renaming the complex "Jay," and dating it in the interval from 5500 to 4800 B.C.

It is possible that applying the term Jay, or J, to specimens that resemble undisputed PaleoIndian points on the one hand, and to examples that resemble Archaic forms on the other, has led to the confusion regarding chronological placement for these remains. Jay points are rather simple in form (see Fig. 1), and probably were developed independently many times. Arguments over whether they were restricted to the early Archaic may be focusing on the wrong question.

Irwin-Williams (1973) argues for the Archaic placement of Jay, not only as a point form, but also as an associated technological complex and settlement system. Those who argue for the PaleoIndian assignment of Jay may be discussing a morphologically different form (Roosa's wide variety). They are certainly not suggesting PaleoIndian assignment for the technological complex and settlement pattern delineated by

Irwin-Williams in the Arroyo Cuervo region.

The possibility that certain PaleoIndians made points that somewhat resemble early Archaic forms may be only coincidental, does not require an interpretation of technological continuity, and need not contradict Irwin-Williams' (1973) Archaic sequence. In the event that points of the Jay form are found to date both in the PaleoIndian and the Archaic periods, much future confusion could be avoided if a different name were assigned to one of the manifestations.

In his survey of the Estancia Basin, Lyons (1969:172) found geomorphological evidence suggesting that Archaic Desert Culture remains may date as early as 10,000 B.P. in the area, coeval with the PaleoIndian occupation. Lyons suggests that the Desert Culture and PaleoIndian remains reflect concurrent occupation of the area by two separate socio-ethnic populations. The evidence he offers in support of this, however, is not convincing. I consider it more likely that the Desert Culture and PaleoIndian remains, if they were indeed contemporaneous, represent different aspects of a single food procurement system. Within this interpretation, the sites with PaleoIndian points would have been used for hunting activities, while many of the Desert Culture sites may have been related to plant foods.

At the site of Tillery Springs, located near the town of Estancia, Lyons and Switzer (1975) reported finding mammoth remains which were radiocarbon dated at around 2,000 B.C. Other samples of mammoth in the Estancia Basin have yielded dates of ca. 4,000 and 6,000 B.C. Lyons and Switzer proposed from these dates that the shrinking Lake Estancia was a region where Pleistocene megafauna survived long into the Holocene.

If these dates are valid, and if Desert Culture complexes in the area can indeed be dated to as early as 10,000 B.P., some significant implications are evident. It is possible that there was little difference, in general, between PaleoIndian and Archaic subsistence. With the northward migration of vegetation zones following the Pleistocene, there would, of course, have been some differences in the kinds of plant and smaller animal foods available to PaleoIndian and Archaic populations in the area. However, the general focus of the subsistence systems - plant and animal foods, supplemented by occasional



megafauna - would have been congruent. Thus, in at least the Estancia Basin, the possibility exists that the traditional view of the PaleoIndian/Archaic transition as involving a shift from a focal to a diffuse economy may be incorrect. Of course, this notion rests upon compound inferences, each of which is empirically tenuous, but it does suggest a fascinating research topic for the area.

The kinds of Archaic projectile points found in the overview area reflect both the northern Oshara forms and the southern Cochise varieties. These are often said to represent distinct cultural traditions (Berman 1979:27). Cultural traditions in archeology are normative constructs, referring to what are thought to have been identifiable population units sharing a generationally transmitted heritage.

The notion that Oshara and Cochise represent cultural traditions is clearly explicit in Lang's (1977) study of Archaic occupation in the Galisteo Basin, just to the north of the Estancia Valley. Lang found Oshara points in use during the early Archaic, until perhaps 1,500 - 1,000 B.C., at which time Cochise points came to be used. He suggests that Cochise populations moved into the area from the south, replacing the resident Oshara groups.

There are some elements of plausibility in Lang's reconstruction, but these are more than offset by questionable assumptions. It is conceivable, for example, that distinct groups of hunters and gatherers might have emphasized different forms of projectile points in order to symbolize social affiliation. Polly Wiessner (personal communication) has recently observed a similar phenomenon among the !Kung Bushmen of the Kalahari. If projectile point form was indeed manipulated for this purpose in the Archaic of the Southwest, the level on which it would have been done would have been small, localized groups. However, when archeologists write of Oshara and Cochise as cultural traditions they are referring, not to local groups, but to large, regional populations occupying thousands of square miles. To argue that such regional populations could have maintained generationally transmitted traditions of socio-ethnic unity seems scarcely credible.

What, then, is the significance of the distribution of Oshara and Cochise points? I have argued previously (Tainter and Gillio 1980:115) that what is reflected in such spatial

distributions is degrees of interaction among localized populations (cf. Caldwell 1964). Interaction is manifest in such things as trade, intermarriage, and the adoption of symbols to reinforce relationships. It thus leads to the development of an archeological record showing broad similarities over large areas. No degree of cultural unity is implied, nor is any needed to account for the archeological distributions that are observed.

The western New Mexico zone of intermixing of northern Oshara and southern Cochise point forms anticipates a similar zone between the later Anasazi and Mogollon manifestations. Quite possibly, from the early Archaic until the depopulation of the Mogollon area, western New Mexico was characterized by two major interaction spheres, one centered in the north (Oshara, later Anasazi), the other in the south (Cochise, later Mogollon). Populations at the edge between these two interaction spheres variously participated in one or the other, as local conditions made advantageous.

Marshall's (1982) discovery that Archaic populations in the riverine area settled near high diversity locations along the Fra Cristobal range is potentially of great significance. In other parts of New Mexico, such as the Arroyo Cuervo region, similar settlement in high diversity locations led to reduced mobility and consequent population growth. Whether similar processes occurred in the riverine area of southern Socorro County is a question meriting investigation.

#### Early Agriculturalists

The early agricultural period in the overview area is poorly known. The most extensive research at sites dating to the late Archaic/Basketmaker period has been conducted by Anzalone (1973) at Lemitar Shelter and other sites in San Lorenzo Canyon north of Socorro.

Anzalone demonstrated that the four sites he analyzed were probably habitation loci. Based upon analysis of floral remains, he posits a mixed foraging/agricultural strategy for the time period. The presence of cultigens and pottery record significant cultural change from previous time periods.

To the north, in the Central Rio Grande Valley-Rio Puerco area, and indeed throughout much of the northern Southwest (Glassow 1980),



the Basketmaker II/Basketmaker III transition culminated a long series of adjustments to the pressures of population expansion. This is clearly evident in the Archaic sequence of the Arroyo Cuervo/Albuquerque West Mesa region (Irwin-Williams 1973; Tainter and Gillio 1980:47-48, 97-99). Growth of population is evident throughout the Archaic in this area (Irwin-Williams 1973).

By the Armijo phase (1800 - 800 B.C.) population had grown to the level where maize became important as a stored winter food, although still remaining only a small part of the overall yearly diet. At this point the importance of evening out the harvest of individual groups led to fall/winter population aggregations, ritual resource distributions, and increased social complexity. When continued population growth required further adaptive changes, the preferred options were expansion of the settlement system and use of marginal environments. Some degree of resettlement to the Albuquerque West Mesa occurred after 1000 B.C.

By this point the Archaic population of the area had apparently exhausted its options for intensification of a hunting and gathering economy. With further population growth the stage was set for a truly significant subsistence change: the shift to major reliance on agriculture. This is evident after the Basketmaker II period in the Albuquerque area with a settlement shift from the West Mesa to the Corrales Valley, and with a corresponding shift from high diversity locations in the Arroyo Cuervo to low diversity floodplains in the Rio Puerco.

There are thus indications that the late Archaic period in the Central Rio Grande Valley was a time of population pressure, subsistence stress, expansion of the settlement system, and resettlement in less desirable localities. Some of this resettlement may have involved expansion of Rio Grande populations out of the valley and into upland regions to the east.

Such a pattern of expansion seems to be indicated in the historic distribution of linguistic groups in the Salinas area. Tiwa speakers at contact were found distributed down the east side of the Manzanos from Chilili to Quarai; Piro (Tompino) speakers were situated to the south and southeast (Bandelier 1892:265) (Map 13). This distribution may have developed by a process such as the

following: (1) expansion of riverine Tiwa speakers through Tijeras Canyon, (2) thence out into the Estancia Valley, (3) similar expansion of the riverine Piros through Abo Pass, and (4) thence east and south. (It should be noted that Schroeder has developed a different interpretation of native Salinas language distributions [1964]. It is discussed in the history section of this study.)

Given the pattern of stress documented for the late Archaic, it is possible that the Tiwa-Piro expansion into the upland area occurred during the last few centuries B.C. or the first few centuries A.D., and resulted from population pressure. Data to test this reconstruction are not currently available, although Oakes (1979) has documented a ca. 700 A.D. pithouse in Tijeras Canyon, while Caperton (1981) notes pithouse sites around Jumanes Mesa.

Of course, it is entirely possible that this postulated Tiwa-Piro expansion occurred at some other time in the prehistoric sequence. Blevins and Joiner (1977) document major settlement in



Map 13. Distribution of Historic Linguistic Groups In The Study Area (adapted from Schroeder [1968: Figure 2], with modifications).

Tijeras Canyon after 900, while Mera (1940a:23) notes an increase in the number of settlements along the east slope of the Manzanos during Glaze E. Furthermore, Marshall's (1982) survey did not reveal substantial Archaic settlement along the Rio Grande near the Salado and Puerco confluences, although such settlements are found farther up these drainages. It should be remembered, though, that the Tiwa-Piro expansion into the Salinas area apparently involved complete linguistic replacement, at least along the east side of the mountains. It is easier to envision such linguistic replacement when high density horticulturalists impinge on low density hunter-gathers (late Archaic/early Basketmaker period) than when one group of high density agriculturalists impinges on another.

The occurrence of Basketmaker (San Marcial phase) settlements along the Fra Cristobal range (Marshall 1982; C. Gossett 1984), in the same area as the earlier Archaic population concentration, acquires considerable significance when viewed within this regional context. Is it possible that concentration of Archaic population in a desirable locale, with subsequent demographic growth, led to the development of sedentary horticultural communities? Additional fieldwork in this area to delineate the nature and extent of Archaic occupation would seem to be called for. Let us hope that the answer does not lie at the bottom of Elephant Butte Reservoir.

There is a decided trend toward riverine settlement in the early Puebloan era (Tajo phase), a trend that Marshall (1982; Marshall and Walt 1984) ascribes to overpopulation or habitat deterioration in upland areas, and/or to the development of irrigation. Since it is not likely that the development of labor intensive irrigation techniques was an independent variable, the former possibilities merit consideration. The first such riverine settlements are located along the Salado and Puerco confluences, downstream from earlier and contemporaneous settlements along these tributaries. Often, several room blocks are found together, suggesting an organized community. By the 11th/12th centuries A.D. (Early Elmendorf phase), both the number and size of sites expanded considerably (Marshall 1982; Marshall and Walt 1984).

Ford, Schroeder, and Peckham (1972) have attempted to reconstruct the past distribution of linguistic groups in the area based upon ceramic

distributions. They identify the Tiwa, around 900 A.D., by Red Mesa B/w. The Tompiro around Gran Quivira are identified by San Marcial B/w. By 1150 the Tiwa, which they recognize at this time by Socorro B/w, are thought to have extended down river to Socorro. The Tompiro of this era are equated with Chupadero B/w.

Ford, Schroeder, and Peckham show the Tiwa (Socorro B/w) of 1200 as barely encompassing the Rio Salado; the Piro are identified by Casa Colorado B/w. The Tompiro, identified by Chupadero B/w, are shown over essentially their historic range. For the 1300 era, these populations are still equated with the ca. 1200 ceramic types.

Around 1400 A.D., the Tiwa, identified by Los Padillas Glaze-Polychrome, are shown in an abbreviated range, their southern border a few miles north of where it had been earlier. The Piro (Rio Grande Glaze A) are interpreted as having extended their territory north to the Rio Salado. The Tompiro are still characterized by Chupadero B/w.

Ford, Schroeder, and Peckham admit that their basic assumption, that major pottery styles can be correlated with particular linguistic groups, has not been validated (1972:37). Indeed, their reliance on ceramics for this purpose has essentially no theoretical basis. Why, for example, should we assume that populations which are linguistically unified will be culturally unified? For every ethnographic case that can be documented where language and culture converge, one can find others where they do not. In the archeological record, an assumption of linguistic/cultural convergence requires a leap of faith at which we should hesitate. Even if this assumption is warranted, and if these prehistoric language groups were also culturally unified, we need to ask, which cultural features were employed to symbolize this unity? Ford, Schroeder, and Peckham assume that ceramics served this purpose. They do not make this assumption, though, on either theoretical or empirical grounds, but rather employ ceramics only because they make a convenient, easily observable type of datum. It seems obvious, though, that the convenience of observing a datum bears no intrinsic relationship to its relevance for solving research problems. Thus, there is no inherent reason to believe that ceramics may identify linguistic groups, in this or any other case.

In conducting their survey of the lower Puerco and Salado drainages, Wimberly and Eidenbach (1980) set out to test Ford, Schroeder, and Peckham's interpretations. They noted that early Puerco sites are dominated by Cibola Gray ware and Salado sites by a mix of brown and gray wares. The brown wares are consistently present throughout the ceramic era. The mix of wares on Salado sites suggests to Wimberly and Eidenbach that these wares do not represent distinct sociocultural groups, while the early and continued presence of brown wares argues against population incursions from the south. Wimberly and Eidenbach conclude that the historic Piro populations were the descendants of earlier residents, and were not recent immigrants from the south (1980:228-230).

#### Late Agriculturalists

In the riverine area, there was a decided trend toward population aggregation, beginning in the late 13th century. Large, plaza-containing buildings came to replace scattered room blocks. For a time such large pueblos were consistently built in elevated, defensible locations (Marshall, Kight et al. 1981). Marshall suggests that these occurrences were prompted by the dislocations attendant upon regional depopulations (1982; Marshall and Walt 1984). Caperton (1981) also suggests a concern with defense, on the part of Salinas populations, at this same time.

Far more is known about the late prehistory of the Salinas Province than about any other spatial or temporal component of the overview area.

The excavation of Gran Quivira Mound 7 yielded data which Hayes (1981) divided into three phases of occupancy. The Early phase structure was round, and centered on a small plaza and kiva. It contained perhaps in excess of 200 rooms. This symmetrical structure was distorted during the Middle phase by the addition of rooms. The mound may have been abandoned for about 15 or 20 years sometime between 1515 and 1540. The succeeding Late phase construction displays long stretches of common wall that were laid without breaks in the masonry, seeming to indicate planned construction. Hayes estimates that 45-50 families may have occupied Mound 7 during the Late phase.

The Late phase may mark a significant episode of social change at Gran Quivira, characterized by

expansion of the social hierarchy. The addition of cremation to the previously exclusive practice of inhumation signals a new, superordinate status level in the society. This status dichotomy was also observed at nearby Pueblo Pardo.

The study of ceramic manufacturing and trade patterns by Helene Warren (1970a, 1981b) has yielded provocative results. The population of Gran Quivira apparently produced little of its own glaze pottery, preferring to import most. In the early glaze periods, until around 1450, practically all glaze pottery came from the north. During the Glaze C period a ceramic industry developed at Abo and possibly some neighboring villages. This locality for a time supplied most of the glazes to nearby villages and to the northern Jornada del Muerto. This industry persisted until after 1600, at which time another glaze source developed at Quarai.

The rise and fall of ceramic industries that Warren has traced at such places as Tongue, Abo, and Quarai opens new areas for research into prehistoric Southwestern economies. This research area has been virtually untapped. The factors influencing the formation of trading ties, the reasons why certain localities developed primacy in manufacturing, and the economic effects on local populations when these industries collapsed, are among the topics that future scholars in the area may wish to address.

The human skeletal remains from Gran Quivira reveal much about the population. Reed (1981) notes the presence of exceptionally tall individuals in the series, and postulates Plains genetic influence. This has been disputed by El-Najjar (1981) on the basis of cranial morphology.

Reed reports a mortality profile for the Gran Quivira series which is not exceptional for a non-industrial population. Infant mortality was high, but deaths thereafter declined until about age 25. The majority of adult deaths occurred in the fourth decade, with only a few living beyond 50 years.

Harris' (1972) study of transverse lines has interesting implications. Among his findings was the observation that different segments of the populations were differentially affected by health-disturbing influences. As a whole, though, the people of Mound 7 seem to have experienced a major decrease in morbidity between



the Early and Middle phases, and a slight further decrease in the Late period.

It is interesting that Gran Quivira, when compared against other archeological populations, shows a very low overall incidence of transverse lines. Christy Turner (personal communication) believes that, in comparison with other Southwestern populations, the Gran Quivira people were quite healthy (cf. El-Najjar et al. 1976).

Many archeologists (myself included) might find this a startling observation (e.g., Steen 1977). Such things as the deficiency of surface moisture in the Salinas Province, the susceptibility of the area to drought, and the dramatic collapse of the province in the 1670s combine to give a picture of a territory which was rather marginal for a Puebloan adaptation. Yet in this territory we find a Late Puebloan population, not only quite healthy, but perhaps even healthier than the people of supposedly more favored portions of the Southwest.

The existence during the late period in the Salinas Province of large, complex, nucleated communities, which around 1550 experienced expansion of their social hierarchy, appears at odds with the healthy status of the population. Since more complex social and ritual systems carry greater per capita costs than less complex ones, the development of social complexity must arise because of some need, some stress which can be alleviated through organizational change. In the late Archaic of the Arroyo Cuervo area the stress of population pressure on food supply led to increased social and ritual complexity, then to settlement and foraging changes, and finally to agriculture. Yet at Gran Quivira the healthy status of the population argues against food stress. What, then, led to the complex societies of the late period?

There are some factors that are pertinent to this dilemma. In the first place, the fact of good health in the late period does not preclude poorer health earlier. It is possible that food stress did exist in earlier periods, but that it was alleviated by the organizational changes of the late period. It is worth recalling in this regard that stature, dental pathologies, and transverse lines all indicate improvements in health between the Gran Quivira Early and Middle phases (Scott 1981; Swanson 1976; Harris 1972). Thus, emphasis should be placed on collecting still earlier samples of skeletal material from

the area, and on analyzing these in a comparable manner.

Secondly, it is possible that the factor(s) precipitating social complexity in the late period may not have been food stress, but requirements of aggregation for defensive purposes. Caperton (1981) has noted many pueblo sites in the area that he believes were defensively situated. If there was little or no stress on local food supplies in most years, then such defensive preparations may have been in anticipation of external populations. The vulnerability of Salinas Province towns to Plains dwellers was graphically illustrated by the attacks of the historic period.

In any event, the appearance of stress-induced behavior (social complexity), in the face of apparent nutritional adequacy, is yet another research problem in the overview area that could benefit from scholarly attention.

Despite the healthy status of the Gran Quivira population, the imposition of Spanish control over the region affected native health adversely. El-Najjar (1981) notes facial changes in the Late phase that he attributes to stress and malnutrition. Turner (1981) found lowered life expectancy in the historic period. Male stature decreased in the Late period (Scott 1981), while dental pathologies increased (Swanson 1976). Portions of the population experienced increases in morbidity, mirrored in transverse lines, which Harris (1972:233) attributes to disease and Spanish domination.

As noted in the previous chapter, Mera (1940b) has documented a contrast in late prehistoric pueblos between compact, organized structures, such as Pueblo Blanco (Map 10), and more dispersed settlements such as Pueblo Colorado (Map 12). Noting the similarity in village plan between the later form of settlement, and the earlier, late 13th century brown ware villages (e.g., Map 11), Mera suggests that with the abandonment of the Jornada Mogollon region around 1350-1400 A.D., groups from that area established residence in the Salinas Province. Here they supposedly built large settlements of scattered room blocks, in the manner of their former villages. These settlements existed coterminously with the more compact pueblos of the area's initial occupants. Mera identifies the Jornada population as the Jumanos referred to by the Spanish, while classifying the resident



population as Tompiros.

Vivian (1964) details discontinuities in the adoption of architectural and technological features between Gran Quivira and the Rio Grande. These discontinuities are evident in ceramic manufacturing patterns, such as the lack of carbon paint and Mesa Verde designs, persistence in use of brown wares, and minimal manufacture of glazes at Gran Quivira. There was also temporal discontinuity in kiva architecture, with the kivas in use at Gran Quivira in the 1600s resembling those used in the Rio Grande area 300 years earlier.

Vivian develops an interpretation for these events which follows Mera's ideas. He sees two distinct groups at Gran Quivira, the local population and immigrants from the Jornada Mogollon area. He identifies the latter as a distinct faction in the community, being the portion of the population that the Spanish mentioned as practicing tattooing. Vivian believes that these newcomers were responsible for the technological lag between the Rio Grande and Gran Quivira, and contributed to a lack of social cohesiveness in the community.

Such an interpretation seems in many ways unusual. There is not one whit of concrete evidence that such a migration to the Gran Quivira area even occurred, let alone that it had the supposed effect on technology and architecture. Indeed, in one sense Vivian's interpretation is rather puzzling. In the normative framework, when archeologists are confronted with some otherwise inexplicable episode of cultural change, migration is often postulated as the responsible factor. Yet Vivian cites migration to account for the lack of cultural change.

Mera makes the crucial assumption that socio-ethnic groups may be identified by individual archeological characteristics, such as degree of architectural compactness. Mera thus proceeds under the notion that this architectural feature amounts to nothing more than an idiosyncratic "custom" of the Jornada population, a custom supposedly universal to that population, and not occurring among their neighbors. Cordell and Plog (1979) have recently made the point that such normative generalizations in Southwestern archeology are often empirically wrong. They are certainly wrong in the present case. In the overview area, which according to Mera should evidence only compact architecture, dispersed

room blocks have been recorded dating to the Jacal Period (Caperton 1981). In the Jornada area, which should display only dispersed settlements, compact pueblos have been recorded (e.g., Marshall 1973).

Mera's notion that ethnic and linguistic groups can be identified by a particular architectural form, and that such a form constituted an idiosyncratic "custom," is surely oversimplified. Prehistoric Southwestern communities varied in such factors as population size, number of constituent groups, integrative mechanisms, degree of planning, defensive considerations, availability of building materials, developmental history, and the like. The form that a prehistoric pueblo took reflected the combined influence of these and other factors. To single out ethnicity or linguistic identification as the sole source of community organization is not only oversimplified, it is incorrect.

Vivian's interpretation, that the supposed Jornada immigrants were responsible for delayed adoption of Anasazi characteristics, rests upon the notion that the behavior of a group's neighbors will automatically be imitated. It assumes that mere knowledge of an alternative form of behavior is a sufficient reason for adopting that behavior. This assumption is easily countered by the observation that, if it were correct, the world would be culturally homogeneous. On a more practical level, one can observe that forms of cultural behavior vary in their energy costs. Even among seemingly equivalent solutions to the same problem, such as kiva form, there are likely to be differences in the costs of construction and maintenance. This fact alone suggests that the notion of automatic diffusion of innovations is unwarranted.

It should be kept in mind that diffusion, if and when it occurs, is a process to be explained. Why does a population adopt new modes of behavior? Not from mere knowledge of alternatives, but from compelling need or perceived benefit. Thus, the lack of adoption of ceramic and architectural innovations at Gran Quivira is not as surprising as Vivian finds it. It may merely reflect the lack of need for, or benefits from, the new features. It is not necessary to invoke the deus ex machina of population incursions to account for it.

At the most basic level, the idea of a Jornada Mogollon migration to the Salinas Province is

uncertain. Vivian's suggestion, that the Jornada immigrants constituted a faction practicing tattooing, enjoys the benefit of being essentially untestable (unless a cemetery of mummified Gran Quivirans could be found, and it could be shown that the tattooed individuals were biologically more similar to Jornada populations than those without tattoos. As noted in the previous chapter, McWilliams (1981) could find no evidence for biological change through time in non-metric oral traits. Since immigration would result in some degree of biological change, the likelihood of such a population movement is considerably diminished.

We are, of course, led to ask: what then happened to the Jornada Mogollon population when the Tularosa Basin was depopulated? It is possible that population segments went to other areas, such as the northern Jornada del Muerto, the Piro territory, and the lower Rio Grande below what is now El Paso. Yet, if skeletal samples from these areas fail to substantiate such population intrusions, then we would truly be left with a puzzling explanatory problem. Perhaps serious attention should be given to Wimberly and Rogers' (1977:451-453) suggestion that the presumed abandonment of the Jornada area may reflect, in whole or in part, localized population decline, with the remaining population reverting to a less intensive form of land use, one more difficult to recognize archeologically.

The nature of changes occurring in native societies as a result of Spanish domination has not been adequately addressed. Most students working in the area note the dramatic population decline and subsequent abandonment, attribute these to excessive Spanish demands, drought, disease, and Apache raids, and proceed no further. Yet there is much more to be learned.

The floral remains from Abo, and the faunal remains from Abo and Gran Quivira, yield a picture of a historic era Salinas Province diet which differed markedly from the aboriginal one. The 17th century diet apparently was based upon domesticated fauna, supplemented by native species, and primarily native flora, supplemented by introduced cultigens. Butchering marks on the Gran Quivira domesticated fauna reveal lack of native familiarity with the animals. If, in the native societies, faunal resource procurement and processing was a predominantly male activity, and floral resource procurement and processing primarily a female sphere, then the imposition of

Spanish control may have affected male subsistence activities more than female ones. A similar observation was made by Deetz (1963) on the basis of his excavations at La Purisima Mission in California. Perhaps this can be generalized as a common pattern in Spanish colonial situations in the New World.

We can, at present, only begin to appreciate the complexity of the cultural changes that occurred under Spanish domination. In singling out drought or raids as the reason for the abandonment of the region, we undoubtedly oversimplify the situation. Droughts and raids, after all, occurred in the prehistoric era, and apparently did not lead to abandonment. Brown has criticized this tendency to suggest single variables as causes for disruption of Indian cultures.

Brown suggests that multiple, interacting, independent and dependent variables be examined, and the feedback relationships among these delineated (1979). In her own study of the historic-era Illinois, Brown was able to demonstrate relationships among such variables as village solidarity, ritual observances, political structure, population, technology, and subsistence (1979:254-263). Her observations about the breakdown of Illinois culture are not directly comparable to the present situation, but her demonstration of the complex causal relationships leading to this collapse is. Our understanding of the collapse of the Salinas Province will be furthered considerably when the interdependent relationships among Spanish economic demands, religious persecution, subsistence change, labor scheduling, trade, technology, community organization, native political change, climate, and external relations are considered. Such factors, acting in concert, brought about the abandonment of the area. The immediacy of drought and raids may have only been the reasons why the Spanish permitted the population to leave.

#### Cultural/Temporal Sequences

Scientific inquiry is a process which relies, at the most basic level, on classification. Without at least the most rudimentary forms of classification no scholarly study could proceed, for it would be impossible to filter out irrelevant observations. In archeology, classification has been a central process, often pursued to the point where questions about the meanings of our classifications have been relegated to secondary

priority.

Archeological classifications dealing with artifacts will not be dealt with here, except to note that, as elsewhere in the Southwest, ceramic classification would benefit from clear statements of which attributes are sought for classification, why these are sought, and how they are

Table 11

Agriculturalist Sequences

| Year | Riverine Area                                    | Upland Area     |
|------|--------------------------------------------------|-----------------|
| 1700 |                                                  |                 |
| 1600 | Colonial Piro                                    |                 |
| 1500 |                                                  |                 |
| 1400 | Ancestral Piro                                   | Masonry Period  |
| 1300 |                                                  |                 |
| 1200 | Late Elmendorf                                   | Jacal Period    |
| 1100 |                                                  |                 |
| 1000 | Early Elmendorf                                  |                 |
| 900  |                                                  | Pithouse Period |
| 800  | Tajo                                             |                 |
| 700  |                                                  |                 |
| 600  | Basketmaker III<br>(San Marcial<br>in the South) |                 |
| 500  |                                                  |                 |
| 400  |                                                  |                 |

measured. Instead, a few comments will be addressed to the topic of cultural and temporal sequences.

Among the sequences proposed for the agricultural occupation of the study area, one for the riverine area (Marshall and Walt 1984), and one for the upland region (Caperton 1981), are shown in Table 11. Toulouse and Stephenson (1960), Hayes (1981), and Baldwin (1983) have shown that these sequences might be considerably refined. When more work has been done in this area, they undoubtedly will be.

The point of this section is to call for reflection on the procedure commonly followed in constructing cultural/temporal sequences. The overview area is unusual in that it is one of the few regions of the Southwest where no sequence has been established that is customarily adhered to. Thus, the opportunity exists to develop chronologies that avoid some of the pitfalls that Cordell and Plog (1979) have outlined.

Cordell and Plog (1979) point out that normative classifications are often wrong, ignoring important ranges of variation within classes. Of equal importance is the fact that classifications that focus on normative constructs do so to the exclusion of a wide range of interesting socio-cultural phenomena (Tainter and Gillio 1980: 115). Not only may cultural and temporal classifications focus on artifactual and architectural similarities or dissimilarities, they may also concentrate on such things as forms of social organization, subsistence mode, population density, focus of external trade, or any other characteristic that is relevant to specific research questions. Thus, there can be developed many cultural/temporal classifications for an area, all useful for specific purposes, all equally valid, all equally "real."

In effect these paragraphs issue a challenge to whatever archeologists in the future begin the task of developing cultural/temporal classifications for central New Mexico. Let us make certain that we state the purposes of these classifications, what they are designed to accomplish, what characteristics are relevant to establishing classes, how these are to be measured, and what is the range of variation within classes. Such classifications would be almost unique in archeology, and would be well worth the effort.

## CONCLUDING REMARKS

In this chapter I have touched upon some topics that might be pursued in future research in the overview area. Few answers have been given to the questions that have been raised. Instead some general issues pertaining to these topics have been delineated, with the objective of, hopefully, sharpening and focusing future work.

Our state of knowledge about the area does not allow more to be done. But in a more optimistic vein, the study area permits the opportunity for essentially a "fresh" research start, one that will allow both the evaluation of what we think we know about the prehistory of the Southwest, as well as afford the opportunity to address new questions.

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1. In a previous study of this kind I noted that skeletal samples from the Puerco Valley of east-central Arizona do not substantiate the interpretation that Mogollon immigration accounts for the appearance of Mogollon characteristics in the area (Tainter and Gillio 1980:85-86). David Stuart has questioned this interpretation, suggesting that the population of the region may have been genetically homogeneous, so that migrations would not show up in skeletal characteristics (Stuart and Gauthier 1981:121, 127). This point is obviously pertinent to the present case.

Stuart makes the assumption that neighboring populations may interact to such a degree as to be genetically indistinguishable, and yet maintain striking cultural dissimilarities. I find such a notion implausible, requiring as it does the unrealistic assumption that in-marrying affines totally abandon the behavior patterns of their natal groups. Indeed, Stuart seems to agree with this when he suggests, at a later point in his work, that ethnic differentiation and restricted marital linkages (leading to within-group genetic homogeneity) will covary (Stuart and Gauthier 1981:170). Of course, at this point he contradicts his previous assertion that ethnic differentiation and biological differentiation will not covary. I find it more likely that cultural differences observable archeologically will correspond in varying degrees with genetic differences. When cultural differences and similarities arise from the process of interaction, no other outcome seems possible.

In fact, there are empirical cases which substantiate this point. As part of his research among the Yanomamo of the Amazon Basin, Chagnon (1972) showed that tribal organization does lead to localized genetic microdifferentiation, and that divergent tribal groups are more genetically distinct than those with close historical ties. Among archeological cases, in a study of ceramic distributions in the Lower Illinois Valley, Houart (1975) found a correspondence between a social boundary identifiable in ceramic characteristics, and a biological boundary observable in skeletal remains. And in the South Point, Hawaii, cemetery, Underwood (1969) was able to distinguish between the skeletal remains of consanguines and coresident affines. Lane and Sublett (1972) have demonstrated the possibility of distinguishing modes of post-marital residence in skeletal samples. Their techniques were successfully applied by Buikstra (1972) in a study of Hopewellian skeletal remains from the Illinois Valley. When osteologists can demonstrate the capacity to observe such subtle genetic distinctions in skeletal remains, it seems unlikely that massive population incursions could not be discerned.



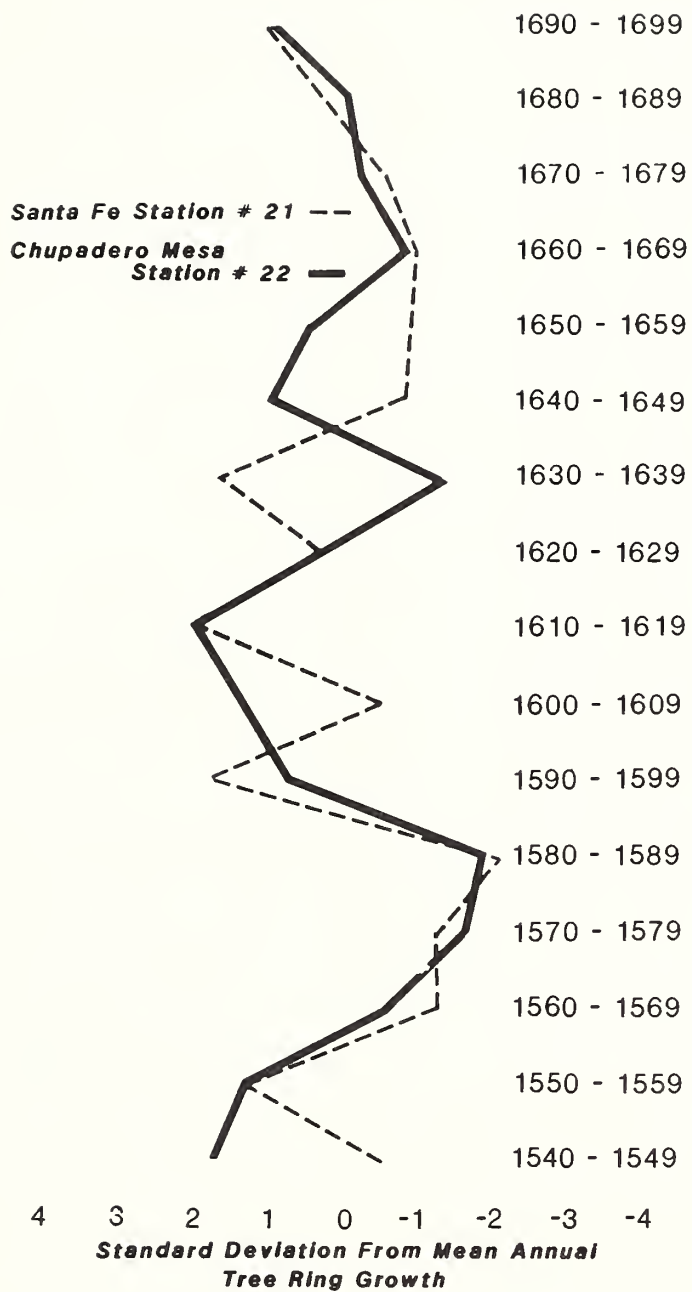


Figure 5. Dendroclimatic variations, Chupadera Mesa, A.D. 1540 to 1699 (after Dean and Robinson 1977).

# HISTORIC SETTLEMENT

## INTRODUCTION

The documentary history of the American Southwest begins with the chronicles of Cabeza de Vaca recorded between about 1528 and 1536, and those by the Coronado Expedition in 1540. Historians, geographers and anthropologists use a four-phase scheme to characterize the major political events of New Mexico history. These phases are: the Spanish Colonial Period (1540 - 1821), the Mexican Period (1821 - 1846), the Territorial Period (1846 - 1912) and the period of New Mexico Statehood (1912 to present). The scheme applies throughout New Mexico, but within separate geographic regions and culture areas other events may have had more impact on the historical landscape. The four-phase scheme is not used in the following discussion because other events have had more impact on the historic landscape as seen from the perspective of the Overview study area.

The culture history that follows is not intended to be a detailed chronology of events, nor a comprehensive social history of the overview area. It is intended as a sketch of patterns of land-use as they changed through time in the study area. The text draws from a variety of cultural, economic and historical sources. For more information about any particular topic the annotated bibliography (by Dr. John P. Wilson) is a comprehensive guide to the literature. It is on file in the USDA Forest Service Southwestern Regional Office in Albuquerque.

## SPANISH COLONIAL EXPLORATION, 1540 - 1598

### The Conquerors

Tales of incomparable riches, cities of gold, and pagan souls, prompted entrepreneurs and friars to leave the mining and ranching frontiers of Nueva Vizcaya to explore north of New Spain (Mexico). Legends of the Seven Cities of Cibola, the cities of gold, were carried back to New Spain in 1536 by Esteban (Estevanico), a Negro Moor who survived a shipwreck on the Texas coast in 1528. Esteban guided Fray Marco de Niza to Cibola in 1539. At the Zuni Pueblo of Hawikuh the Moor was killed, and Fray Marco returned to the frontier with more tales of fabulous wealth to be had. A conquering expedition under the direction of Francisco Vasquez de Coronado left New Spain in 1540. After wintering at the pueblos of the

Tiguex Province, probably at the site now called Coronado State Monument, Coronado's troops explored widely, giving the first eye-witness accounts of Pueblo settlement in the central New Mexico overview area.

An eight-day journey east of Zuni brought the explorers to the Rio Grande where they found 12 settlements belonging to the province they called Tutihaco. The terraced adobe pueblos of these people and their clothes were similar to those observed by the explorers in the Tiguex Province (Hammond and Rey 1940:220). Exploring further downstream, four more Tutihaco pueblos were located. The Coronado expedition traveled great distances across New Mexico to the Great Plains in search of gold. A party explored the area east of the Rio Grande but apparently did not contact the Salinas Pueblos. Records of the expedition (Bolton 1916, 1949; Hammond and Rey 1940) indicate that the conquerors came in contact with many Pueblo and non-Pueblo Indians, and the accounts provide brief sketches concerning the lifeways of the people.

Failing to find the mineral deposits that would allow a self-supporting colony, Coronado returned to New Spain and interest in the far north was quieted for 40 years. In this interlude, however, the Spanish Crown issued strict regulations for the expansion of New World settlements. The Royal Ordinance of 1573 strictly forbade colonists to conquer and exploit native populations (Simmons 1979:179). Instead, pacification and Christian teachings were to be the means of expanding Spanish interests in the New World.

Fray Agustin Rodriguez, two other Franciscan missionaries, and a small army led by Francisco Sanchez Chamuscado attempted the first missionary expedition in 1581. The first village the party reached on their journey up the Rio Grande was located about 30 miles south of present day Socorro. It was abandoned. This was probably the Piro Pueblo of San Felipe. The chronicle of the expedition gives the following report of a settlement thought to have been the Piro pueblo of San Miguel.

The following morning we left the abandoned settlement and after traveling the two leagues which the Indians had indicated, came to a pueblo of many houses three stories

high, but found no inhabitants. They had left the night before because they had noticed our approach. In the houses we found many turkeys and much cotton and corn. Although we did not see any people in the pueblo on entering it, we did find in the valley many cornfields like those of Mexico, and also fields of beans, calabashes and cotton. We did not dare take any of the goods, for we wanted the people to know we did not intend to harm them. We found the houses very well planned and built in blocks, with mud walls, whitewashed inside and well decorated with monsters, other animals and human figures. There were many curious articles in these houses, more neatly wrought than those of the Mexicans when they were conquered. The inhabitants have a great deal of crockery, such as pots (ollas), large earthen jars (tinajas) and flat pans (comales), all decorated and better than the pottery of New Spain.

We endeavored to locate the people in order to calm them and bring them to us peaceably, which we managed to do. We appealed to them by friendly gestures because, otherwise, we should not have been able to see their land. Nevertheless, if they had attempted to prevent our coming we would have entered by force in order to examine the region and what it contained, for we had already endured many hardships, but it pleased God that some Indians should come to us, and we sent them away in peace telling them to make the sign of the cross with their hands as an indication that we did not wish to harm them. The news that we were coming in peace spread so widely that there was not a day when we were not surrounded and accompanied by more than 12,000 people (Hammond and Rey 1966:82).

Shortly after that, the party met other Piro who gave the explorers corn, and told them of Indians upstream with whom they were at war.

The Chamuscado-Rodriguez party passed through at least 16 Piro pueblos (Table 12). Schroeder (1979:240) lists five on the west bank of the Rio Grande and 11 pueblos on the east bank of the river. In these 16 settlements he listed a total of 853 "houses." The Piro told the explorers there were 20 pueblos in their nation (Hammond and Rey 1966:82). The explorers were much

impressed with the "orderliness" of the Piro villages, their customs, and the abundance of agricultural products, cotton, turkeys and buffalo meat available in the Piro towns. The chronicler remarks that "for a barbarous people the neatness they observe in everything is very remarkable" (Hammond and Rey 1966:102).

The party journeyed east of the Rio Grande and contacted the Salinas Pueblos. They were not as hospitable as the Piro. In fact, they were described as being war-like and greatly feared by other Pueblos (Hammond and Rey 1929:77).

The friars were overwhelmed by the potential number of converts in the area they explored among the Zuni, Taos and Rio Grande pueblos and the settlements of the plains nomads, whom they called Vaqueros (Apaches). One of the friars attempted to return to Mexico with news of their discovery. He was murdered by Indians who stalked his trail through the Galisteo Basin. Hostilities between the Pueblos and their visitors worsened until Chamuscado and the soldiers departed leaving the friars at Puaray Pueblo, a Tiwa village located near Bernalillo.

The Franciscan Order of Mexico, concerned for the safety of the friars, sent a rescue party under the leadership of Don Antonio de Espejo, an eager soldier-of-fortune and wealthy colonial merchant. Early in 1583, en route to the Upper Rio Grande through the Piro country, Espejo learned that the Franciscan fathers had been murdered. While this news did not stop the expedition, it freed Espejo to explore for profits. Espejo's party recorded 12 Piro pueblos totaling 250 houses and about 10,000 people between the areas now known as San Marcial and La Joya (Hammond and Rey 1966:21; Schroeder 1979:238). Schroeder (1979:241) has attempted to correlate the Piro pueblos recorded by the Chamuscado-Rodriguez and Espejo parties.

Exploring east of the Manzano Mountains, Espejo visited the Margrias (Manguas) Pueblos. Here, he estimated, there were 11 pueblos with 40,000 residents (Vivian 1964:12; Schroeder 1979:238). Diego Perez de Luxan, the chronicler of the expedition, considered these people to be more hostile than the Piro. Luxan describes the villages as masonry room blocks built around large plazas. He notes that the rooms were whitewashed and that the kivas were used for dances as well as for baths. Mines, presumably salt mines, timber and pine nuts were resources

that explorers noted were readily available to the residents of the three villages the party visited (Hammond and Rey 1929:76-78). Espejo's own account (Bolton 1916:180-181) notes that the Pueblos had difficulty obtaining water, but that they had abundant food and natural resources, namely hides, cotton and mines. These pueblos were also referred to in the Espejo and Luxan documents as the Xumana or Jumano pueblos.

The meaning of the term "Jumano" has been the subject of considerable debate (Scholes 1940). The term appears in documents with reference to

many different Pueblo and non-Pueblo groups. Scholes (1940) analyzed the term and deduced that it was used most consistently when describing people who practiced some form of body decoration or tattooing (in Spanish the term "rrayados" or striped was used), evidently a common practice in pre-Hispanic times.

#### Pre-Hispanic Settlement and Land-Use Practices

The chronicles of the exploration period permit broad generalizations to be offered concerning the pre-Hispanic settlement and land-use

Table 12

#### Possible Correlation of Piro Pueblo Names

| Rodriguez-Chamuscado Party, 1581 - 1582                                                                       |                                                                             | Espejo, 1582 - 1583                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| West Bank                                                                                                     | East Bank                                                                   | Location not given                                                                                                                   |
| Taxumulco:<br>123 houses, 2-3 stories                                                                         | Tomatlan: 70 houses, 2-3 stories<br>(in 2 sections)                         | El Termino de Puala: 60 houses,<br>20 houses (2 stone pueblos)                                                                       |
|                                                                                                               | Mexicalcingo: 40 houses, 2 stories                                          | (3 leagues)                                                                                                                          |
| Piquinaguantento (Chiquinagua):<br>100 houses, 2 stories                                                      | Caxole: 15 houses, 2 stories                                                | Juevas de las Camadres (a place?)                                                                                                    |
|                                                                                                               | Pueblo Nuevo: 25 houses, 2 stories                                          |                                                                                                                                      |
|                                                                                                               | Ponsitlan: 25 houses, 2 stories                                             |                                                                                                                                      |
|                                                                                                               | La Pedrosa: 14 houses, 2 stories                                            | within 5 leagues, 4 pueblos<br>in ruins and 1 small one                                                                              |
|                                                                                                               | El Hosso (El Osso): 50 houses,<br>2 stories. Elota: 14 houses,<br>2 stories |                                                                                                                                      |
| Pina: 85 houses, 2 stories<br>(2 plazas). Piastla: 35 houses,<br>2 stories. Santiago: 25 houses,<br>2 stories | San Juan: 40 houses, 2 stories<br>San Miguel: 47 houses, 2 stories          | El Gallo: 100 houses, 800 people<br>50 houses, 400 people<br>50 houses, 400 people<br>50 houses, 400 people<br>50 houses, 400 people |
|                                                                                                               | (2 leagues)                                                                 | (3 leagues to 5 pueblos close<br>together)                                                                                           |
| people                                                                                                        | San Felipe (San Phelipe): 45 houses,<br>2-3 stories                         | First pueblo: 50 houses, 400                                                                                                         |

NOTE: The Pueblos are listed in the order encountered from south (bottom) to north (top). West bank and East bank Pueblos given on the same line are described as opposite each other .  
(from Schroeder 1979: 241).



practices of central New Mexico Pueblos. The explorers found the greatest concentration of people living in agricultural villages along the Rio Grande and its tributaries, from the vicinity of present-day San Marcial to Taos. They distinguished among the villages on the basis of their language, dress, and architectural attributes. Schroeder (1979) summarizes the documents of this period and provides a useful synthesis of the New Mexico pueblos at the time of Spanish contact. Some researchers may, however, find it difficult to accept some of his interpretations of documentary sources.

The documents for this period distinguish two different Pueblo groups within the central New Mexico overview area. Although they do not agree on the names of the settlements, Coronado, Chamuscado-Rodriguez and Espejo differentiate between those people living along the Rio Grande and the Pueblos living on the eastern flanks of the Manzano Mountains. Despite the documentary records, anthropologists are still not certain of the relationship of these groups. Did they, in fact, speak the same language, or did they speak a mutually intelligible dialect? Those Indians described by the Spanish as living along the Rio Grande are referred to as the Piro. Only fragments of the Piro language have been recorded (Bartlett 1909; Harrington 1909). Most linguists (Davis 1959:76; Hale and Harris 1979:171) believe that Piro may not even be part of the Tanoan language family to which Tiwa belongs. They speculate that Piro may be part of an as yet unidentified language family, and await archeological data to establish the larger cultural affinity of the Piro.

The pueblos located on the eastern flanks of the Manzano Mountains are collectively referred to as the Salinas pueblos. Some researchers (Schroeder 1964; Kessell 1979a) group six major pueblos (Chilili, Tajique, Quarai, Abo, Tabira and Las Humanas or Gran Quivira) as Tompiro Pueblos. In this they imply that Tompiro is a dialect of Piro and ultimately Piro and Tompiro are Tiwa languages. Others (Bandelier 1890:281; Scholes 1940; Wilson 1973:15) distinguish two groups among the Salinas pueblos, Tiwa speakers who lived at Chilili, Tajique and Quarai, and Tompiro speakers who occupied Abo and Las Humanas (Gran Quivira), Tenabo and Tabira (Map 13). The basis of distinguishing a Tiwa-Tompiro split is contained in letters of the Spanish Archives of New Mexico (Twitchell 1914:268-280).

According to the documents, the Piro lived in villages located along both banks of the Rio Grande as well as "away" from the river (Hammond and Rey 1966:219). When the explorers arrived in Piro villages they mentioned that they had been temporarily abandoned, perhaps indicating that the Piro had refuge settlements to which they retreated in times of danger. The multistoried, adobe pueblos in which they made their more permanent homes were, walled and ranged in size from villages containing 14 or 15 houses to villages made up of over 100 houses (Hammond and Rey 1966:103-104, 115-116, 219; Schroeder 1979:240). The definition of a house is not clear. The abundance of turkeys, beans, squash, corn and cotton products mentioned by the explorers imply that domesticated produce formed the staple of Piro diets. This observation may, however, illustrate the amazement with which the Spanish viewed any sign of "civilization" among native peoples, and may not be an accurate picture of Pueblo subsistence strategies. The fields described by the explorers bordered the rivers in valleys near the pueblos (Hammond and Rey 1966:172) and Schroeder (1979:236) mentions the use of diversion ditches for irrigation.

The discussions of the Salinas pueblos during the exploration phase are very brief. Located as they were on the flanks of the Manzano Mountains, these pueblos had greater access to the grazing herds of buffalo, abundant sources of pine, pinyon nuts and minerals. The documents are not explicit about the extent to which these products were used in the pueblos. Woven cotton mantas, turkeys and maize were supplied to the explorers by the Salinas pueblos (Hammond and Rey 1929:78). Espejo (Bolton 1916:180-181) mentions that these villages had no surface water, but they did have extensive agricultural fields. Neither Espejo nor Luxan describe the deep wells which later expeditions found so unique among the Salinas pueblos.

#### The Aftermath of Exploration

At the close of this phase of Spanish exploration, it is unlikely that the settlement practices or material cultural of any of the pueblos was much changed. That the lands north of New Spain contained souls to be saved and resources that could be exploited was certainly proved by the explorations of Coronado, Espejo, and Chamuscado-Rodriguez. Whether such a venture could be self-supporting was another matter.

Unable to wait for the approval of an ineffectual government, Gaspar Castano de Sosa and a party of 170 colonists in 1590 ascended the Pecos River to establish a colony in New Mexico. The party was arrested at Santo Domingo Pueblo for this illegal colonization effort in late winter 1591 by Captain Juan Morlete and returned to Mexico. The prisoners were marched down the Rio Grande, presumably through the Piro settlements. Documentation of the Morlete Expedition is sparse, and provides few details of the route traveled by the party or their observations of Pueblo life (Hammond and Rey 1966).

Simmons (1979:179) points out that the contacts between the Pueblos and explorers, although brief, set the pattern for future conflicts between the two cultures. Contact between the Piro and Spanish, and the Salinas pueblos and the explorers, was more amicable than the contact the explorers had with other Tiwa, Tewa, Keres and Zuni pueblos. Conquest was strictly prohibited by Royal Ordinance but, by any name, the events that accompanied the post-exploration mission and colonization programs amounted to the subjugation of Pueblo and non-Pueblo peoples.

#### COLONIZATION AND MISSIONARY PROGRAMS 1598 - 1680

##### Onate's First Attempt

When Juan de Onate established the first Spanish colonial capitol in New Mexico in 1598, he located it on the far northern Rio Grande near the Tewa pueblo of San Juan. The capitol was north of the hostile Tiwa pueblos of the Middle Rio Grande but still close to available laborers and converts. From his base among the Tewa pueblos, Onate began ecclesiastical pacification of a new Spanish frontier.

Enroute to the colonial capitol the 400 colonists, soldiers and missionaries spent more than one month among the Piro. Part of this time the group spent living in tents along the river bank below the pueblo they called Qualacu (Hammond and Rey 1953:318). The Piro living at Teypama Pueblo supplied the party with corn, and the village of Sevilleta was the first pueblo in which they camped for protection (Hammond and Rey 1953:318). Onate records at least 45 settlements in the province he referred to as Atzigues or Tziguis (Schroeder 1979:239). This area undoubtedly included Piro and Tompiro settlements. Later documents refer primarily to eight Piro and

Tompiro villages. From north to south they are San Juan Baptista, Sevilleta, Alamillo, Pilabo, Teypama or Teypana, Qualacu, San Pascual, and Senecu (Marshall 1975:4).

In September 1598, when New Mexico was proclaimed a field of the Franciscan Order, missionary assignments were made to various pueblos (Simmons 1979:180). Three pueblos of the "Xumanes rrayados" or Tompiro were included in this first assignment (Scholes 1940:276). Conversion of the Piro did not begin until 1626 (Hodge et al. 1945:62).

Onate briefly visited the Tompiro pueblos at Abo and Las Humanas in October, 1598. Las Humanas, no doubt, was the site now called Gran Quivira (Vivian 1964:8). In 1599, the first of many hostile encounters between the colonists and the Salinas pueblos took place. Sargento Mayor Vincente de Zaldivar and a dispatch of soldiers were sent to one of the Tompiro pueblos to collect supplies and mantas or cotton blankets which were used in colonial times as tribute and barter. The villagers refused to supply the goods, and as a further insult, presented the hungry soldiers with stones to eat. Onate was not a man with whom to trifle; he returned to the pueblo (not named in the documents), collected a small number of blankets and punished the villagers for their defiance of his nephew Zaldivar. Punishment was indeed harsh; Onate burned a portion of the pueblo, fired shots into the crowd killing five or six people, and then hanged three of the more belligerent and undoubtedly outraged natives (Scholes 1940:276; Vivian 1964:14).

The Battle of Agualco (Acolocu) fought in December 1600 or 1601 was another punitive expedition sent to the Salinas pueblos. Spanish troops were sent to the Salinas area to retaliate against an ambush of five soldiers who were attempting to return to New Spain. At Agualco they met an allied force of Salinas Pueblo fighters in a battle that lasted 6 days. The Pueblos were defeated, and the colonial soldiers took slaves from among the Pueblo captives. Between 800 and 900 Pueblo Indians were killed in this battle. The location of Agualco has not been positively identified; Scholes (1940:278) believed it was the village of Chilili. Toulouse (1949:3) and Wilson (1973:15), suggest that it may have been Quarai. Toulouse bases this on the high percentage of Glaze E (V) ceramics found in a thick charcoal deposit during the excavation of

the West Mound at Quarai. Another battle, fought between the Spanish and residents of Las Humanas (Gran Quivira) some time before 1601, is not well documented (Vivian 1964:15).

The colony suffered many defeats in 1601. Having fought a savage battle at Acoma, where his nephew was killed, Onate was then faced with the mass desertion of colonists and missionaries who had become disillusioned by harsh conditions and the prospect of a bleak future (Kessell 1979a: 87-30). By 1608, when Onate resigned, it was obvious that the New Mexico colony could not be self-sufficient but neither could the clergy turn from their charges. In January 1609, the decision was made to maintain New Mexico as a missionary field (Vivian 1964:16). This decision did not obviate the underlying problem of supporting an expanding population in a land of scarce resources. In fact, it began a conflict that would characterize 17th century New Mexico - the conflict between church and state for the control of limited resources that included the Pueblos.

France Scholes (1936-1937) traces the important history of church and state conflicts, and the ultimate effect this strife had on the Pueblos. He divides the conflict into two periods. The time from 1610 to 1650 he considers the most stressful period, in which there was almost open rebellion by Hispanic colonists against the powerful clergy (Scholes 1936:25). During the second period, from 1659 to 1664, the Inquisition controlled the colony and colonial administrators through fear, superstition and threat of excommunication (Scholes 1936:25). Quarai played a major role in the Inquisition (Wilson 1973:18). When the capitol of the colony was moved to Santa Fe in 1610, Governor Pedro de Peralta conscripted Pueblo laborers to construct public buildings. This caused conflict with the friars in missions close to Santa Fe who lost valuable herdsmen and farmers to the public building program (Scholes 1936:32; Simmons 1979:181).

At this point, it is necessary to mention the encomienda and repartimiento, systems devised in the 16th century to extract tribute and labor from the Pueblo Indians. Simmons (1979:182-183) describes these two economic institutions as follows:

The encomienda...was a privilege extended to certain favored subjects to collect an annual tribute from a specified town or number of

Indians. The proprietor of such a grant, the encomendero, was expected to exercise a trusteeship over his tributary subject, providing material to their church and offering military protection. Although the amount of tribute he was allowed to collect from the pueblo in the form of maize and cotton blankets was strictly limited by law, the system here, as elsewhere in New Spain, cloaked all manner of abuses.

During Governor Rosas term of office (1637-1641), the number of encomiendas in New Mexico was fixed at 35. The workings of the system are well known, but the names of the encomenderos and the amount of tribute taken from the Pueblos are not well documented. Tribute was generally set at one manta and one fenega of corn per household per year. Table 13 lists the known encomenderos for the Piro and Tompiro pueblos.

The repartimento was "... a system of forced labor designed to provide workers for Spanish farms and haciendas" (Simmons 1979:182). The laborers were seldom paid the pittance required by law.

#### Missions of the Piro and Salinas Pueblos

Fray Alonso de Peinado, seeking refuge from the political intrigues of the Rio Grande missions, chose to begin the conversion of the Salinas Pueblos in the period 1613-1614 (Scholes 1936:31; Scholes and Bloom 1944-45:(19), 335). By the late 1620s, missions had been founded at Tajique, Cuarac (Quarai), Las Humanas and Abo (Scholes 1940:279) and the mission program was extended to the Piro pueblos (Hodges et al. 1945:248; Scholes and Bloom 1944-45:(20), 63). Table 14 lists the approximate dates at which missions were established in Piro and Salinas villages.

The mission program in the colony was given a great boost in 1626 with the arrival of Chief Prelate Fray Alonso de Benavides and 12 friars. The total of mission priests was then about 30. Benavides was aided in his three year tenure among the Pueblos by his amicable relationship to the governor, something not enjoyed by many previous or later members of the clergy. Benavides is credited with the conversion of Las Humanas Pueblo (Gran Quivira). The construction of San Isidro Chapel at Las Humanas (Gran Quivira) was probably supervised by Fray Francisco Letrado, an aid and successor to Benavides, between 1629 and 1631 (Vivian



1964:63). San Gregorio de Abo was probably constructed by Fray Francisco Fonte, another member of Benavides party between 1626 and 1634 (Toulouse 1949:4). Among the 14 or 15 Salinas pueblos, Benavides reports six missions including Cuarac (Quarai), Las Humanas (Gran Quivira), Abo, Tajique, Chilili and Tabira (Hodge et al. 1945:65).

Few dates for the establishment of Piro missions are known with certainty, but Hodge, Hammond and Rey provide sound reasoning for dates they offer based on an analysis of the documents. As early as 1626, Benavides makes reference to visits to Senecu and Socorro. Testimony of a soldier taken in August 1626 mentions a convent or residence of friars at Socorro (Hodge et al. 1945:250 fn 72). It is possible that his reference is to the same mission as Nuestra Senora del Socorro de Pilabo, which was certainly established by 1629. When Benavides left New Mexcio in 1629, there were three missions among the Piro at Senecu, Socorro and Sevilleta. Later, Sevilleta seems to have been abandoned, possible because of Apache raids, and replaced by Alamillo where Fray Diego Lopez was listed as guardian in 1638 (Hodge et al. 1945:250 fn 72).

The Benavides Memorial and other historic sources raise interesting questions about the number of Piro settlements in the period from 1598 to about 1630. Schroeder notes a total of 44 named Piro

pueblos in 1598, but by 1620 these were apparently reduced to 15 pueblos and 6000 people (1979:237, 241). Was this reduction due to the abandonment of certain pueblos, the aggregation of Piro villages around mission centers, or problems in the ethnic and political boundaries recognized by Onate and Benavides? Or, is it possible that later scholars have combined sources of different time periods?

By the mid 1630s, the missions were well established among the Piro and Salinas pueblos. With changes in colonial governors every 3 years, there were also changes in the application and enforcement of laws designed to protect the rights of the Pueblos and the obligations of church and civil authorities. Among the most venal of the colonial governors was Luis de Rosas who served from 1637 to 1642. Rosas extracted tribute from the Pueblos far beyond that intended by the encomienda. He established workshops in the capitol where Pueblo Indians and Apache captives were forced to produce textiles for export (Scholes 1936:300). The profits were kept by Rosas.

Events that had been building through the first 30 years of colonization came to a climax. The conflict between encomenderos and clergy over the disposition of agricultural products and livestock left the Pueblos with critical shortages. The encomenderos in the Rio Abajo and

Table 13

Encomenderos of the Piro and Tompiro

| Encomienda    | Encomendero                                                              | Date      | Source                                |
|---------------|--------------------------------------------------------------------------|-----------|---------------------------------------|
| Las Humanas   | Capitan Alonzo Rodriguez                                                 | 1657-1659 | Scholes 1937:286                      |
| Las Humanas   | Capitan Miguel Ynojós<br>(Hinojós)-later restored<br>to Alonzo Rodriguez | 1661      | Scholes 1937:381                      |
| 1/2 of Quarai | Francisco de Anaya Almazan                                               | 1662      | Hackett 1937:252-253                  |
| Las Humanas   | Juan Dominguez de Mendoza<br>Cristobal Duran y Chavez                    | 1662      | Scholes 1941:34-38                    |
| 1/2 of Abo    | Francisco Gomez Robledo                                                  | 1662      | Kessell 1979:185-187                  |
| Sevilleta     | Capitan Diego de Guadalajara                                             | 1661      | Scholes 1937:162<br>Chaves 1954:42-43 |
| Senecu        | Felis de Carvajal                                                        | 1661-1664 | Chavez 1954:15                        |



Salinas Pueblos were so brazen that they were openly living on Pueblo lands or very near the Pueblos, practices strictly forbidden by law (Scholes 1937:389; Hackett 1937:131; Wilson 1973:21). Civil officials often made a mockery of the mission programs by encouraging native religious practices, and by publicly challenging the authority of the friars. During the term of Rosas, the Apaches were becoming increasingly hostile to frontier settlements and pueblos. Rosas used retaliatory raids as an excuse to seize captives from hostile as well as neutral Apache groups (Scholes 1936:301). This practice continued under later governors who exported captives for sale in Mexico.

There appears to have been a slight climatic

change at this time, reflected in tree-ring growth. Specimens collected from archeological sites and living trees in the vicinity of Chupadera Mesa exhibit growth rings which indicate that the period between 1630 and 1639 was drier and warmer than the previous 47 years, as shown in Fig. 5 (Dean and Robinson 1977). Apaches attacked the Rio Grande frontier pueblos in 1640 and burned 20,000 fanegas of corn (Vivian 1964:25), crops that none of the pueblos could afford to lose. In the same year, an epidemic swept through the pueblos killing 3,000 Indians, about 10 percent of the Pueblo population (Vivian 1964:25). The Apaches must have been stressed too, for they increased their attacks on the pueblos. In 1643, Las Humanas (Gran Quivira), usually the scene of lively and friendly trade

Table 14

Central New Mexico Mission Establishment Dates

| Date                   | Name                                        | Franciscan Father*                                     |
|------------------------|---------------------------------------------|--------------------------------------------------------|
| <u>Salinas Pueblos</u> |                                             |                                                        |
| 1612-1613              | Chilili                                     | Fray Alonso de Peinado                                 |
| 1622-1626              | San Gregorio de Abo                         | Fray Francisco Fonte                                   |
| 1627                   | San Isidro at Las Humanas<br>(Gran Quivira) | Fray Alonso de Benavides                               |
| 1660-1668              | San Buenaventura at<br>Las Humanas          | Fray Diego Santander                                   |
| <u>Piro Pueblos</u>    |                                             |                                                        |
| 1626-1627              | Socorro (?)                                 | Fray Alonso Benavides<br>Fray Martin de Arvide         |
| 1626-1629              | San Antonio de Padua at<br>Senecu           | Fray Antonio de Artega<br>Fray Garcia de San Francisco |
| prior to 1629          | Nuestra Senora del Socorro<br>de Pilabo     |                                                        |
| prior to 1629          | San Luis Obispo de Sevilleta<br>at Seelocu  |                                                        |
| prior to 1629          | Alamillo                                    | Fray Diego Lopez (1638)                                |

\* The names of later friars and dates of their service are listed in the Revised Benavides Memorial of 1634 (Hodge, Hammond and Rey 1945:246-252 fn 72, 263-265 fn 29, 265 fn 80).

See also Scholes and Bloom (1944-1945).

between Apaches and Pueblos, was attacked. The attackers may have been the Siete Rios Apaches, whose traditional use area extended south and east of the Piro and Tompiro pueblos (Forbes 1960:147). No doubt one reason for the increasing hostility was retaliation for the part that Piro and Tompiro pueblos had taken in Spanish attacks against Apache settlements on the Plains.

Hodge et al. (1945:248) list the population of Pilabo as 400 in 1641, and list Alamillo and Sevilleta as visitas of the Socorro mission. The residents of Sevilleta were moved by the Governor to Alamillo in 1656 (Schroeder 1979:237). The friars recommended this move to facilitate the conversion of the Sevilleta residents who were reverting to "idolatry" (Scholes 1937:162). Three years later the next Governor, Bernardo Lopez de Mendizabel, ordered their return to Sevilleta. He was said to have done this to safeguard the encomienda of Captain Diego de Guadalajara, and to ensure a labor force for his own interests (Scholes 1937:162). Six Indians were hanged at Senecu in the 1650s for the role they played in an Apache attack near Magdalena on five settlers, including the Alcalde Mayor (Forbes 1960:63). Sorcery was also on the rise among the Piro, clearly an indication of stress within the villages.

A claim filed in 1661 by the church against former Governor Lopez shows the extent to which Piro and Salinas Pueblos were pawns in the struggle between church and state. The following claims were made against the Governor:

. . . 50 Indians from Senecu, 36 from Socorro and 10 from Alamillo, and a number of pack mules and horses from each pueblo were employed for about 2 weeks transporting pinyon to a warehouse in Senecu; 63 Indians from Socorro worked for 3 days carrying salt from the east bank of the Rio Grande to the pueblo of Socorro; 60 laborers from Cuarac (Quarai) were forced to go to the pueblo of the Jumanos and from there to the Rio Grande with loads of pinon and were engaged in this labor for 17 days; 19 Indians from Abo worked for 6 days carrying maize from Tabira and the Jumano Pueblo to the house of Captain Nicolas de Aguilar, the Alcalde Mayor of the Salinas district; as many as 40 Indians from Jemez were employed at one time taking pinyon to depots in San Felipe, Cochiti or Santa Fe; 22 Indians from Galisteo were sent to the house

of Captain Aguilar in the Salinas area for maize to be transported to Santa Fe; Indians from Tabira loaded salt at the salt marsh and took it to the house of Sargento Mayor Francisco Gomez who had an estancia called Las Barrancas on the Middle Rio Grande (Scholes 1937:394-395).

In addition, the following claims were made for stockings manufactured for the Governor: Senecu 100 pairs, Socorro 30 pairs and Alamillo 46 pairs (Scholes 1937:395). This was the same Governor who ordered that mission livestock be moved from Las Humanas (Gran Quivira) to Abo because the Indians were exhausting themselves hauling water from deep wells for the animals (Scholes 1940:282). To his credit, Governor Lopez increased the wages for Indian laborers from one-half to one real per day, for which he was criticized by the friars as well as encomenderos. The friars seem to have had some control over the produce of Abo. An organ for the church was purchased in 1661 from the sale of pinyon nuts (Toulouse 1949:4).

At a time when strains in the colony must have been clearly evident, it is surprising that the mission at Las Humanas (Gran Quivira) was being renovated. A new and rather elaborate church was constructed between 1660 and 1668, dedicated to San Buenaventura (Vivian 1964:88). Fray Diego Santander was the first resident friar at Las Humanas (Gran Quivira), and he apparently directed the construction. The labor required to build San Buenaventura, coupled with the demands of the encomenderos and the conflict between civil and clerical authorities over the performance of kachina or traditional dances, would have been enough to foster rebellion. At Quarai, witchcraft and magic spread through the pueblo in 1668 when a German trader, Bernardo Gruber, offered the Indians magic slips of paper that would protect those who swallowed the substance (Hackett 1937:273-276). Gruber was arrested, escaped, and died on the run through the Jornada del Muerto.

A three year drought (1666-1669) brought famine, and epidemic disease once again raged through the Salinas pueblos. In this same period, the Apaches showed no greater mercy. On September 3, 1670, Las Humanas (Gran Quivira) was attacked by Apaches from Siete Rios (Scholes 1940:283). In a report dated 1679, Fray Francisco de Ayeta reported that five villages (Chilili, Abo, Cuarac [Quarai], Las Humanas [Gran Quivira] and

Las Salinas [Tajique]) were abandoned between 1672 and 1679 (Scholes 1940:283). Tabira was depopulated in this troubled time and presumably Tenabo was also evacuated. Some of the survivors went to live among the Manso missions at El Paso, others joined Piro villages on the Middle Rio Grande.

Times for the Piro were no better. Apaches from the Gila and Siete Rios areas attacked Senecu on August 1, 1671, less than one month after they had attacked a wagon train bringing the new Governor (Juan de Miranda) to New Mexico. A counter-offensive force of Hispano and Piro soldiers was ambushed, and warfare against the Piro settlements intensified (Forbes 1960:166-167). An Apache attack on January 23, 1675 forced the abandonment of Senecu (Hodge et al. 1945:248 fn 72). Fray Francisco de Ayeta appealed to royal authorities for help in sustaining the province against Apache attacks.

To protect frontier settlements, Ayeta and a small troop of soldiers attempted to reoccupy Las Salinas (Tajique) and Senecu. The force held the missions from autumn 1677 to March 1678, when they apparently retreated (Forbes 1960:172-173). Ayeta had plans to resettle Cuarac (Quarai) and to launch a major offensive against the Apaches in the Galisteo Basin. Before the battle was mobilized, the Pueblos united and with the help of the Apaches drove the Hispanic colonists, friars and soldiers from New Mexico, ending the first phase of New Mexico colonization.

#### The Hispanic Colony in the 17th Century

The group of settlers that came to New Mexico with Onate was by no means culturally or ethnically homogeneous. Very few Spaniards or other Europeans were included. Mexican Indians, primarily Nahuatl speaking Tlaxcalans, mestizos of Indian and European parentage, and creoles, Europeans born in the New World, made up most of the party (Dozier 1969:52; Swadesh 1974:12; Cordell 1979:113). Swadesh (1974:12) uses the term "Hispano" to describe this diverse group of settlers. In spite of their differences, the rituals of the Catholic religion and the isolation and hardships of frontier life tended to neutralize diversity to produce a more widely shared set of norms and cultural values.

Population figures for the Hispanic colony vary. Scholes (1935:96) believes that the community never exceeded 2,500 in the period 1598 - 1680,

and that the average figure was much lower. Hackett (1937:328) believes that the population at the time of the Pueblo Revolt was probably closer to 2,800. Simmons (1979:182, 186) is more vague, saying that there were no more than 2,000 settlers in the first decades of the 17th Century and that by 1680 there were 2,500 to 3,000 non-Indian people in New Mexico.

The Hispanic population was settled in three main areas: in the capitol village of Santa Fe, around the Tewa settlements near present day Santa Cruz and along the Rio Grande from Santo Domingo to Socorro (Scholes 1935:96). Santa Fe was the only planned community, built according to prescribed Spanish policies for the establishment of towns and distribution of lands (Simmons 1969:8). The rural population lived in more isolated farmsteads usually referred to in the documentary records as estancias or ranchos. David Snow (1979:47) describes the 17th Century rural landscape as follows:

Perhaps as many as 1,000 Spaniards living in ranchos and estancias scattered between Taos and Socorro (and not including those in Santa Fe), occupied some 464,000 acres of irrigable bottom lands and had access to over 4,000,000 acres of grazing land.

Table 15 lists the haciendas and estancias noted in colonial documents that were along the Rio Grande and within the Central New Mexico Overview area. Colonists were strictly forbidden to locate within Pueblo lands, but this condition was frequently violated by colonists who drew on the labor force and perhaps the spiritual support of the missions. In 1633, Fray Estevan de Perea complained that settlers in the vicinity of Cuarac (Quarai) were establishing farms in pueblo fields and ruining valuable arable land by constructing houses and corrals (Hackett 1937:127-131; Wilson 1973:20).

The types of structures and facilities built by the colonists during this period are not well known. David Snow (1979) and Mark Simmons (1969, 1980) appear to be at odds concerning the structure of colonial settlements. Simmons (1969:10) believes that two patterns occurred in the 17th Century. On land grants made to prosperous families, he believes that haciendas were established. In other cases, the rural population built "... farmsteads strung along river or stream courses" (Simmons 1969:10). Snow (1979:47) does not believe that it would have

Table 15

Haciendas and Estancias in the Rio Abajo  
Noted in Colonial Documents

| Name                                                   | Location                                                                                     | Reference                                                         |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Hacienda of Luis Lopez,<br>Alcalde Mayor of Piro, 1667 | Between Socorro and Qualacu                                                                  | Chavez 1954:58<br>Hackett & Shelby<br>1942:I:ccix,<br>1942:II:364 |
| Hacienda of Las Barrancas,<br>Francisco Gomez          | Twenty-three leagues beyond<br>(north) the pueblo of Senecu,<br>and ten leagues below Isleta | Hackett & Shelby<br>1942:II:223,<br>1942:I:cxxx                   |
| Hacienda of Francisco de<br>Valencia                   | Between Isleta and Socorro,<br>north of the Estancia of Thome<br>Dominguez                   | Hackett & Shelby<br>1942:I:xcxi, 27                               |
| Estancia of Cristobal de<br>Anaya (Las Salinas?)       |                                                                                              | Hackett & Shelby<br>1942:I:23-24                                  |
| Estancia of Thome Dominguez<br>de Mendoza              | Below Isleta Pueblo, 14 leagues<br>above the pueblo of Socorro                               | Chavez 1954:25<br>Hackett & Shelby<br>1942:I:xcxi                 |
| Estancia Alanco Perez<br>Granillo                      | Two leagues from Alamillo                                                                    | Chavez 1954:88                                                    |
| Unknown                                                | Four deserted estancias between<br>San Pascual and Socorro                                   | Hackett & Shelby<br>1942:II:205                                   |
| Farm of Felipe Romero                                  | Between Alamillo and Las<br>Barrancas                                                        | Espinosa 1940:66                                                  |

been possible to establish haciendas in a country with such a scarcity of arable land, and whose extensive cattle-raising industry lacked market outlets. Part of their argument may be due to the differences implicit in the way they each use the terms rancho and hacienda.

Simmons uses the term "rancho" as a land-use pattern describing ranchos as ". . . loose agglomerations of small farmsteads" (1969:11) or as ". . . one or more Spanish households located adjacent to farm and orchard lands" (1969:13). Snow (1979:51) characterizes the ranchos as socio-economic units of kin-based residents living in virtual isolation and engaged largely in self-sufficient food production. Snow does not define the term hacienda but seems to be accepting the definition of an extensive

agricultural and stockraising enterprise with far-reaching social and economic control over the lives of resident laborers, such as described in the studies of Mexican haciendas by Chevalier (1963) and Harris (1975). Simmons (1969:11) states that this pattern might have emerged had the Pueblo Revolt not taken place, but he does not describe the attributes of a 17th Century New Mexican hacienda. Simmons and Snow are in agreement that stockraising and agriculture formed the basis of the colonial economy. Little archeological evidence is available at this time to clarify the structure of the 17th Century colonial settlement pattern in the Middle Rio Grande or Salinas area. The available data will be summarized in a later section of this overview.



The powers of government in colonial New Mexico were vested in four major offices: the governor, the secretary of government and war, the lieutenant governor, and the *alcaldes mayores* (Scholes 1935). Twenty-three governors served between 1609 and 1680. On the average, each governor served 3 years. Each decided how to interpret his charge of promoting the advancement of the missions and industries of the province, ensuring internal peace, and protecting the pueblos, missions and colonial settlements from encroachment by enemy attacks (Scholes 1935:74-90).

The secretary of government and war acted as advisor and notary to the governor. Lieutenant governors performed special and largely ceremonial functions until 1660 when, as a result of increasing settlement in the Rio Abajo, the lieutenant governor was responsible for the administration of the colony between Santo Domingo and Socorro (Scholes 1935:91).

The colony was divided into six rural districts administered by the *alcaldes mayores*. The area east of the Manzano Mountains was included in the *Alcaldia* of Sandia and the Rio Abajo was within the *Alcaldia* of Albuquerque. The *alcaldes mayores* had judicial powers to oversee the distribution and use of lands, waters and laborers, which they did justly or unjustly depending upon the man, the issue, and the circumstances.

The majority of settlers were professional soldiers who made their living as *encomenderos* and *estancieros*. Craftsmen, servants, miners and slaves also served the colony. Although they may have received more prosperous *encomiendas* or more productive land grants, the few wealthy colonial families were not spared the hardships of the frontier.

#### Culture Change and Cultural Exchange

For almost a century Hispanic colonists and missionaries sought to change the cultural landscape of the New Mexico colony and to convert the Pueblo Indians from semi-autonomous villages to servants of the church or vassals to an *encomendero*. The Pueblos were subject to a program of directed cultural change executed by resident friars and designed to fully integrate the Indians into the Hispanic colony. At the same time, to the *encomenderos*, *estancieros*, and public officials who sought to exploit the Pueblo

labor force, the idea of Pueblos moving from neophytes into other spheres of colonial life to become rival stockmen, traders or farmers would have been economically disastrous for colonial enterprise (Simmons 1979:182).

A few Indians became important figures in colonial society. Don Estevan Clemente, resident of Abo, was a trusted Pueblo leader in the 1650s. Governor Lopez Mendizabal supplied Clemente with goods that he then traded with the Apaches of Siete Rios. Clemente was able to amass great wealth and to command the respect of the government, friars and the Salinas Pueblos. When he attempted to lead a rebellion against the harsh conditions among the Salinas pueblos in the 1660s and 1670s he was hanged for treason (Kessell 1979b:2-3; Scholes 1935:96).

The century of colonial rule ended with neither the friars nor the *encomenderos* in control of the Pueblos, but with significant changes introduced into many aspects of Pueblo life.

By 1680 the Pueblo population had been reduced to 17,000 people (Simmons 1979:186) through the combined effects of epidemic, famine, and warfare. Likewise, the number of Pueblo settlements had been reduced as the population assembled around mission centers or fragments of beleaguered villages aggregated. The Salinas pueblos were abandoned before the Pueblo Revolt. The Piro and those former Tompiro villagers who had joined the Piro pueblos in the 1670s, fled their Rio Grande villages during the revolt, abandoning forever some of the most productive land in the valley.

In spite of the variety of cereal grains, fruits, vegetables and domesticated animal products introduced into the Pueblo diet by the friars and colonists, and the improvements made in agricultural practices (Scholes 1935:105; Schroeder 1972:53), neither the mission stores nor the *encomienda* farms were able to contribute enough food to prevent repeated famines from decimating the Pueblos. Scholes (1935:105) believes that even when food was plentiful, the new cultigens never replaced the Pueblo staples of corn, beans, and squash.

Toulouse (1949:13-21) found a quantity of plain ceramic wares of a new type in the excavation of Abo, and Warren (1972) suggests that there is evidence of a ceramic industry in the Salinas pueblos that was supplying local Hispano and

Indian communities with pottery. New vessel forms such as soup plates, pitchers, and mugs suggest that Pueblo potters may have been imitating Spanish vessel shapes, and new design elements show the influence of Mexican made pottery. Snow (1973:57) suggests that the Hispano population adopted Pueblo pottery because the Hispanos found ceramic production to be "below" their status.

Wood working, blacksmithing, improved form moulding of adobe bricks, and other crafts were learned in the missions and in private workshops. Metal tools and weapons were treasured items, even among the colonists. While most of the industrial crafts learned by the Pueblos were used in constructing churches and other public buildings, the architectural details seem to have been used to adorn buildings that were only slightly modified from the compact forms and plans of pre-contact Pueblo architecture (Dozier 1970:65). Bread ovens, the beehive shape still seen among Pueblo and Hispanic villages, may have been introduced during this early colonial occupation (Schroeder and Matson 1965:117-120).

During the century in residence, the colonists and friars introduced many material and non-material changes into the pueblos. The Spanish language was adopted as a common language among the Pueblos and Hispanos (Dozier 1970:69). Catholicism was embraced by some Pueblos, but for most Indians this new religion was a veneer over traditional religious ceremonies. In times of stress, as in the period preceding the Pueblo Revolt when famine and Apache warfare overwhelmed many villages, traditional practices emerged again as Pueblos sought to restore order to their lives and revitalize their ancient cultures.

#### THE PUEBLO REVOLT AND RECONQUEST

1680 - 1696

##### Revitalization Among the Pueblos

Acts of defiance, outbreaks of sorcery, accusations of witchcraft and the resurgence of native catzina (kachina) dances signaled in the Pueblos the beginning of a process known as "revitalization" to anthropologists. In this process, ritual and magic are combined to bring about a change in political, economic and social conditions. The Pueblos, desiring to be free of colonial exploitation, religious servitude, and Apache predation, appealed to the forces they

trusted to restore order to their lives.

Resistance to Hispanic domination began with first contact, and by the mid 1600s the Pueblos were openly practicing their traditional religion, and in some places were fostering rebellion. Friars living among the Piro tried to discourage what they termed idolatry by moving the residents of Sevilleta closer to the mission at Alamillo. At Senecu, men accused of sorcery were hanged and trusted leaders like Abo resident Don Estevan Clemente spoke against the oppressive conditions in the pueblos. Even schemes like the panacea Bernardo Gruber offered the residents of Quarai were accepted with the hope that somehow by swallowing bits of paper their burdens would be lifted.

In 1675, Governor Trevino sought to end sorcery among the Tewa of northern New Mexico by imprisoning 47 pueblo religious leaders and hanging three of them (Hackett and Shelby 1942:I:xxii). Their release was won by Pope (Popay), an important religious leader from San Juan Pueblo, who henceforth devoted himself to devising ways to free the Pueblos from their oppressors. Pope was driven from his own pueblo and moved on to Taos, where he claimed the status of a prophet speaking for three divine forces who foretold the death of the Christian God and the flight of the Hispanos. By 1680 Pope and other religious leaders succeeded in uniting the upper Rio Grande Pueblos for an all out assault on the missions, estancias, and Pueblo traitors. The Piro were not informed of the plan. Some have suggested that they were excluded because of their complicity with the Hispanic friars and settlers. This is a surprising conclusion since the Piro were as much victims of Hispanic intolerance and exploitation as any of the northern Rio Grande villagers. Revitalization turned to revolt in August 1680.

##### The Pueblo Revolt and Hispanic Retreat

Testimony of Indians who later described the planning for the revolt indicates that a knotted cord was circulated through the pueblos signifying the number of days to pass before the planned uprising (Hackett and Shelby 1942:I:xxvi:fn 13). The capture of two loose-lipped messengers hastened the Pueblos into action, and at dawn on August 10th, 1690 missionaries and settlers throughout the colony were slain in retaliation for a century of oppression. Before the siege was over, 21 of the 33 friars in the colony and

between 380 and 400 colonists were slain (Dozier 1970:59).

Governor Antonio de Otermin held the capital city for 9 days. After their water supply was cut off by the allied Pueblo forces, the colonists had no choice but to retreat. On August 21 Otermin and a party of nearly 1,000 frightened colonists left Santa Fe.

Lieutenant Governor Alonso Garcia was left to handle the defenses of the Rio Abajo settlements when the Tiwa pueblos of Puaray, Sandia and Alameda joined the revolt. Although they tried repeatedly to make contact, Garcia and Otermin were never able to communicate, and each thought himself the leader of the only survivors of the uprising. Garcia, with a small party of clerics and soldiers, combed the Rio Abajo rescuing those men, women and children who had survived the brutal attack. The Pueblo of Isleta harbored the refugees until they were assembled for the southward retreat.

On August 14 about 1,500 settlers, including 120 soldiers, left Isleta (Hackett and Shelby 1942:I:li). Garcia estimated that 120 people were killed in Rio Abajo estancias, the majority in the densely populated district near Sandia. Otermin's party reached Isleta on September 3, and on September 13 the two parties were united near the Fra Cristobal Mountains.

An advance party from the northbound supply train met Otermin's column at Alamillo, supplying the refugees with much needed provisions. Sixteen days after the two parties of refugees met, they encountered the northbound supply train at La Salienta, located about 15 miles north of El Paso.

By most accounts the Piro pueblos were abandoned during the revolt, as the Piro and some Isleta residents joined the colonists in their retreat from New Mexico. The Piro then established two villages in the El Paso area - Senecu del Sur and Socorro del Sur. In a rather short period of time, the Piro appear to have been so thoroughly enculturated into Mexican village life that even their language vanished (Fewkes 1902a; Bartlett 1909; Hackett 1937:506-508). Testimony presented to Governor Otermin in 1681 by a former resident of Socorro states that those Piro who did not join the retreat took refuge at Isleta, Acoma, and settlements in the Fra Cristobal Mountains (Hackett and Shelby 1942:I:243, 339).

#### The Attempted Reconquest

Otermin remained in the El Paso district until November 1681 before attempting to launch an expedition to reclaim the colony. A force of 146 poorly armed soldiers, 120 allied Pueblos and 28 servants comprised the reconquest army (Hackett and Shelby 1942:I:cxxii). On November 26 the army entered the Pueblo of Senecu. The following quotation from Hackett and Shelby describes the scene of desecration and destruction that greeted Otermin's party (1942:I:cxxvi-cxxvii):

The place was found absolutely deserted. Many signs were seen which indicated that the natives had been oppressed by the Apaches and had left their homes through fear. The walls of the burned church and monastery had been left standing, though these were beginning to crumble. Two bells were found in the belfries, and a third one without a clapper was found in the cemetery. In the latter place a bronze cannon of about 175 pounds weight, which had formerly served as defense for the church and pueblo, and an old pine cross were found. Another cross was found in the main plaza of the pueblo. In the sacristy, the wig and diadem of a crucifix were found lying on the ground, likewise an altar, or communion table, and two fragments of another one. By order of Father Ayeta, some crosses, found in the houses of the pueblo that were intact, together with the wig and the diadem of the crucifix and a few other things from the altars were piled in a heap and burned. The altar and fragments of the other one were thrown into the river. Father Ayeta then requested Otermin to have the clappers removed from the bells in the tower and the bells secured so that they might be carried to the wagons. Otermin granted this request and at the same time gave similar orders regarding the cannon. The three bells and the cannon were not taken away from the pueblo at that time . . . but were hidden and taken to El Paso when the army passed this pueblo on its retreat in January of the next year. Otermin then ordered the pueblo set afire and the rest of the day was spent burning it.

The army then proceeded upstream passing through the ruins of San Pasqual and four deserted estancias before entering Socorro, which had also been sacked and burned (Hackett and Shelby 1942:I:cxxvii). The soldiers gathered up and



burned the crucifixes and other religious objects that had been scattered in and around the pueblo. Otermin's army repeated this ritual at Alamillo and Sevilleta. A short distance from Sevilleta the army found deep pits where the Indians had cached corn and protected it with a shrine of herbs, feathers and a clay vessel modeled with a human face and the body of a toad (Hackett and Shelby 1942:I:cxxix). On the march from Socorro to Isleta, the army passed through the burned remains of four estancias. The estancia of Las Barrancas, located 23 leagues beyond Senecu and ten leagues downstream from Isleta, was the only estancia that had not been greatly vandalized and burned (Hackett and Shelby 1942:cxix).

Otermin staged a surprise attack, taking Isleta Pueblo on December 6, 1681. About 500 Isleta and Piro Indians were living in the village at the time of the attack (Hackett and Shelby 1942:I:cxixii). Father Ayeta, the religious leader of Otermin's army, delivered mass to the village and burned all items associated with idolatry and sorcery. While this religious reconquest was taking place, Otermin sent a smaller party ahead under the direction of Juan Dominguez de Mendoza to prepare the northern pueblos to receive the conquerors. Otermin stayed at Isleta to gather provisions from the depleted pueblo stores. The residents of Isleta could give only 15 bushels of shelled corn, and told Otermin of the drought and famine that followed the revolt (Hackett and Shelby 1942:I:cxixvii). In fact, the Isletans believed that their village would soon be raided by northern Pueblos who sorely needed food supplies.

Mendoza's party reached Alameda, Puaray, Sandia, San Felipe, Santo Domingo, and Cochiti. In all cases, the pueblos were largely deserted; the few elderly and infirm Indians met by the troops told how they had been left by their people who scattered to the hills when they learned of the reconquest attempt. Throughout the villages Mendoza found the Christian symbols smashed and signs of traditional religious practices renewed. Mendoza sent messages to those pueblos he did not visit, but in the end the attempted reconquest failed.

On January 2, 1682, Otermin led the second retreat from New Mexico taking 385 Isletans to El Paso. The Pueblo of Isleta del Sur was established near the two Piro villages and the growing Hispanic settlement of El Paso. While

not successful in reestablishing Spanish rule of the Pueblos, the interviews and explorations Otermin and Mendoza conducted give the most complete picture of the effects of the revolt among the pueblos. The Spanish presidio at El Paso sent two more punitive expeditions to New Mexico in 1688 and 1689 but it was not until the term of Governor Don Diego de Vargas (1690-1696) that New Mexico was reclaimed by Spain.

#### The Aftermath of the Revolt

Documentation of the 12-year period following the Pueblo Revolt is scarce but speculation and conjecture abound. The more dramatic reconstructions of life among the Pueblos after the revolt show the Pueblos having destroyed every vestige of Hispanic culture, including household and religious objects, domesticated animals and cereal crops. Shifts in the locations of Pueblo settlements are known from the period preceding and following the revolt. The Tompiro and Tiwa retreat from the eastern flank of the Manzano Mountains in the late 1670s opened new territory to the Apache and exposed the Rio Grande pueblos to predation (Schroeder 1968). The Rio Abajo, Isleta, and Piro villages were abandoned during the revolt and Otermin's reconquest. Elsewhere in the Rio Grande, the Pueblos seem to have moved their villages to more defensible locations.

Schroeder (1972:56) believes that the Pueblos retained the domesticated animals, crops, and metal tools introduced by the colonists, and continued to use Spanish as a lingua franca. He also suggests that this period may have seen considerable change in pueblo socio-religious organizations as the remaining fragments of Pueblo groups aggregated and readjusted their ritual and cultural patterns. Fray Angelico Chavez (1967) argues that not only were items of material culture retained by the Pueblos, but many mestizos remained among the Pueblos after the revolt. The arguments of Schroeder and Chavez are supported to a great extent by the documents included in Hackett and Shelby's study of the Revolt. Tools, objects of metal, livestock, and crops mentioned in the documents clearly indicate that not all traces of the colonial experience were obliterated during the revolt. Otermin reported that mestizos, mulattos, and people who spoke Spanish were living in the pueblos that he and Mendoza contacted (Hackett and Shelby 1942:I:355).

The unity that allowed the Pueblo Revolt to take



place would not last. Inter- and intra-village factionalism, the scarcity of food, and unrelenting Apache raids weakened the defenses of the pueblos and gave Don Diego de Vargas the opportunity to reclaim New Mexico.

#### The Reconquest

Spanish nobleman Don Diego de Vargas made his first expedition to New Mexico in 1692. Through artful diplomacy and keen insight, Vargas was able to win the allegiance of 10 of the 23 occupied pueblos (Espinosa 1940:31). This victory won Vargas the right to reestablish the Hispanic colony. This task was not easily accomplished. Vargas left El Paso on August 21, 1692 with a force of Hispanic soldiers and allied Pueblo warriors.

On August 31 the army arrived at Senecu. Vargas spent little more than one week in the former territory of the Piro. His campaign journal is brief, saying only that he stopped at Senecu, the ruins of Socorro, the Pueblo of Alamillo, the uninhabited farm of Felipe Romero, and the former haciendas of Francisco Gomez and Thome Dominguez (Espinosa 1940:64-67). He reports that the road was almost impassable, necessitating the use of pack animals to transport supplies. In official correspondence dated January 12, 1693, Vargas makes recommendations concerning the possibility of reestablishing settlement in the Rio Abajo. Of the lands between Isleta and Senecu, Vargas says:

The natives of the said tribes (Isleta) now live in some miserable huts in the pueblo of Isleta, in this district of El Paso, and so it will be desirable to restore them to their pueblo. They will be assured success in cultivating the fields which they plant at the pueblo, because the lands are extensive, in a good climate, and can be easily irrigated, and they will be protected if the said intervening haciendas called "Las Huertas" are settled along with those extending from Las Barrancas, and those toward the abandoned pueblos of Alamillo and Sevilleta, whose natives are scattered and restless, and with the settlement of the said haciendas and the pueblo referred to, it will be possible to restore them to their pueblos. Continuing a distance of ten leagues, Socorro is found, which may be settled with the Indians who at present occupy this one of Socorro in this district of El Paso, and they may be joined

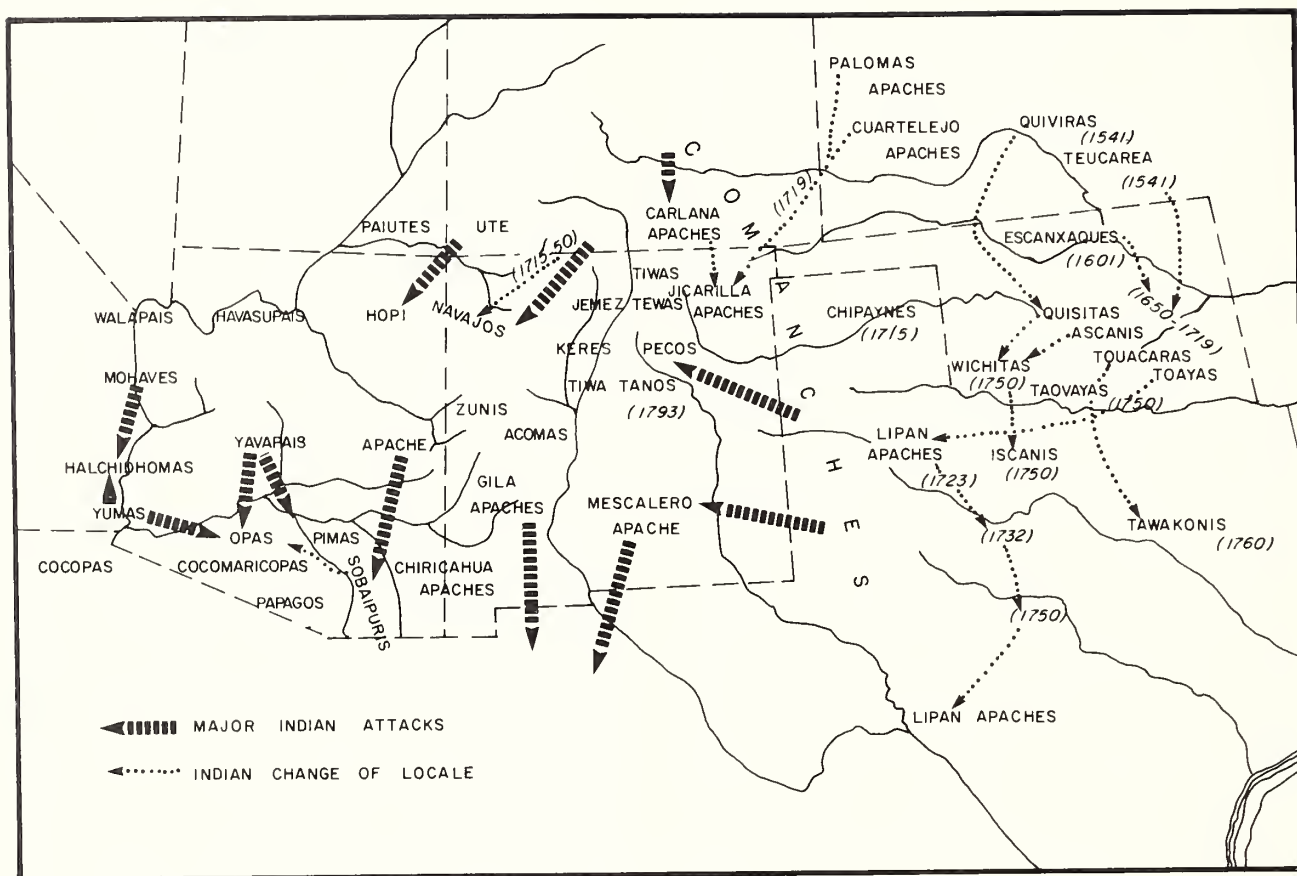
by the Piros, who are few and who live in the pueblo of Senecu in this district, for it is a vast and fertile land; it has its irrigation ditches, and some of the walls of the convent are in good condition. Senecu, which the Piros occupied previously, a distance of ten leagues away, should not be settled because the river has damaged the land, and furthermore it is on a frontier infested with many Apaches. If it is the wish of some to settle the abandoned haciendas, it will also prepare the way for the filling in and occupying of the land (Espinosa 1940: 286-287).

Settlement would not come so fast. Vargas spent more than a year fighting endless skirmishes in attempting to resettle the colony. By summer 1694, the pueblos had been subdued and were placed once again under Spanish rule. Vargas quelled an uprising among the northern pueblos in 1696, and many dissatisfied villagers fled to western pueblos or took refuge among nomadic groups (Simmons 1979:186-187). In effect, pacification was completed. As the 17th century came to a close the Rio Abajo and Salinas Province were virtually tenantless. Fertile farm lands would not lie fallow too long before Hispanic settlers would claim the productive Rio Abajo, but it would be many years before settlers came to the steppe-like plains of the Salinas Province.

#### EXPANDING FRONTIERS, 1696 - 1846

##### Raiders, Traders, and Settlers on the Northern Frontier of New Spain

Significant social, political and economic adjustments were made in the New Mexico colony following reconquest. The struggle between the encomenderos and priests was over, with both groups having lost their privileges, their lands, and their influence over the Pueblos. The encomienda was not reestablished in the colony, but was replaced by a system of granting lands to worthy settlers. The Franciscans were more tolerant of native religious and cultural practices, and the missions were no longer the far-reaching socializing institutions that they had been in early colonial times. The number of missions was greatly reduced, and accounts of priests and bishops who visited New Mexico in the 18th century observe that native ceremonials were more expertly performed than the sacraments of the Catholic church (Adams 1953-54:(29); Adams



Map 14. Indian Pressures and Shifts of the Late Spanish Period (1706 - 1820) [after Schroeder 1968: Fig. 5]. Reproduced by permission of New Mexico Historical Review.

and Chavez 1956:254-258). Pueblo and colonial governments were drawn together by their need for defense against increasing attacks by nomadic tribes.

Without doubt, one of the reasons Vargas was successful in securing the allegiance of the Pueblos was their need for arms and military aid. Vargas died while in pursuit of the Faraon Apaches in the Sandia Mountains in 1704 (Thomas 1940:7). The allied Pueblo and Hispano forces were tested time and again by the Comanches who attacked from their home range in the north-eastern plains, the Utes who came from the northwest basin country, and various Apache bands who attacked from the east, southeast, and occasionally the southwest (Map 14).

Under the reconquest governments, the Taos and Pecos pueblo-trade fairs were reinstituted, and lively trade was practiced when the Plains Indians, Pueblos and Hispanic colonists were not at war. The Plains Indians brought buffalo meat, hides and tallow which they traded for horses,

knives and awls at the pueblos. The Pueblos obtained the horses, knives, and awls by trading with the colonists.

In trade, the colonists would receive the products brought by the Plains Indians as well as ceramics and textiles made at the pueblos. These fairs attracted Indians from more distant regions, namely the Southern Utes and the menacing Comanches. Comanches were first reported in New Mexico when they accompanied fellow Shoshonean-speaking Utes to the Taos trade fair in 1705 (Kenner 1969:28). The homeland of the Comanches had been the basin and range country at the headwaters of the Arkansas River in northeastern Colorado and western Kansas (Wallace and Hoebel 1952:8). They appear to have been forced south during the 1600s by northeastern tribes, who were no doubt allies of the French.

Northeastern and eastern New Mexico offered the Comanches both plains and sheltered mountain valleys for their nomadic life. Comanches and

Utes formed an alliance against the Plains Apaches, the Hispanos, and the Pueblos of New Mexico. By 1750 the tide turned, and the Utes and Apaches allied against the Comanches (Thomas 1940:29). Until a long-lasting peace was finally secured in 1786 (Thomas 1932:329-331), the Comanches alternately preyed upon and traded with the Pueblo and Hispanic villagers.

Spanish colonial governors tried various strategies to curtail Apache raids. During his first term, Governor Tomas Velez Cachupin (1749-1754) attempted to deter Apache raiders from entering the Rio Grande by way of the abandoned Salinas Province. Troops of allied Pueblo and Hispano fighters were stationed at the ruins of Coara (Quarai) and Tajique, as well as the "Bocas" de Abo (Thomas 1940:142; Jones 1966:127-128). Governor Pedro Fermin de Mindinueta (1767-1778) and Governor Juan Bautista de Anza (1778-1788) recommended the reorganization of colonial settlements to reduce the number of isolated ranchos and defenseless villages (Thomas 1932:379; 1940:16-18). Attempts to regulate the location and structure of settlements were not usually successful, nor were attempts to subdue the raiding parties. The Apaches were not pacified until a century later.

In the first two generations following Reconquest, the colony was largely confined to settlement in the Rio Arriba and the El Paso districts. Santa Fe, Albuquerque, Santa Cruz de la Canada, and El Paso were the major villages, but the colony had a predominantly rural settlement pattern.

In the final years of Spanish rule the colony stabilized and the Hispanic population grew significantly. Oakah Jones (1979) and Marc Simmons (1979) have assembled the Hispanic and Pueblo population figures given in various post-Revolt documents. The figures are presented in Table 16. The most reliable figures are those for the 1790 and 1817 censuses, both of which were based on data assembled by civil authorities. The figures of other years are estimates based on observations made by colonial governors, friars, or visitors to the province.

Dozier (1970:86-130) offers a third set of population figures based on data assembled by Jones (1966:153). In 1750, Dozier lists the population at 3,779 "settlers", and 12,142 Pueblos. The population figures for 1760 Dozier gives as 7,666 settlers and 9,104 Pueblos. In

1793, he lists 16,156 settlers and 9,275 Pueblos, and for the last year Dozier analyzes (1799) he lists the population at 18,826 settlers and 8,732 Pueblos.

Dozier believes that the apparent growth of the Hispanic population between 1750 and 1799 cannot be adequately explained by immigration or rising birth rates. Rather, he believes that the increase in the number of settlers is due to the rapid enculturation of Pueblo and nomadic Indians into Hispanic village life and Catholicism. The raw figures presented by any of the researchers are difficult to use for reconstructing colonial demography because of differences in the terms and estimators used by the colonial observers, as well as in the totals generated by Jones and Simmons. Nevertheless, the trends toward an increase in the number of people who shared Hispanic cultural values, and a decline in the Pueblo population, are clearly evident.

Before 1800 the total population of New Mexico was largely concentrated along the Rio Grande north of Belen. Given the limited distribution of farmland, the Hispanic villagers and Pueblos competed for access to arable land, in spite of laws intended to regulate and safeguard the location of Pueblo settlements and Hispanic land rights. Marc Simmons (1969) describes the various Hispanic and Indian settlement patterns reflected in 18th century documents. Simmons (1969:12-15) refers to three Hispanic settlements patterns as villas, poblaciones, and plazas. Villas were population centers arranged to include church lands, commercial districts, residential areas, and agricultural and grazing lands. Royal ordinances required that streets be established according to a grid pattern, but not one of the four New Mexico villas ever achieved such formality. Poblaciones were areas where dispersed ranchos were located. This was the most common form of settlement in newly occupied regions. A rancho would have consisted of one or more households situated adjacent to arable land. In times of danger the rancheros would congregate in fortified villages called plazas. Individual households were also fortified in some cases by enclosing the house and corral in a compact building plan (Conway 1961:6).

Three types of Indian settlements are described in 18th century documents. The pueblo, as a village plan, began in late prehistoric times and continued into the historic period. The number and distribution of Indian pueblos was greatly

Table 16

Population of New Mexico, 1696 - 1821 \*

|          | 1696   | 1744                 | 1752       | 1760        | 1767        | 1776        | 1789       | 1790      | 1793      | 1800      | 1817      | 1821     |
|----------|--------|----------------------|------------|-------------|-------------|-------------|------------|-----------|-----------|-----------|-----------|----------|
|          | Vargas | Monchero             | Cachupin   | Tamaron     | Lafora      | Dominguez   | Concho     |           |           |           |           |          |
| HISPANOS |        |                      |            |             |             |             |            |           |           |           |           |          |
| Families | 70(J)  | 505(J)               | 676(J)     | 890(J)      | 1,487(J)    |             |            |           |           |           |           |          |
| Total    | 450(J) | 2,500(J)             | 3,402(J)   | 4,614(J)    | 9,580(J)    | 5,819(J)    | 5,526(J-S) |           | 22,851(J) | 19,181(J) | 27,157(J) |          |
| PUEBLOS  |        |                      |            |             |             |             |            |           |           |           |           |          |
| Families |        |                      | 1,950(S)   | 2,225(S)    | 2,703(J)    | 2,169(S)    |            |           |           |           |           |          |
| Total    |        | 1,535(J)<br>1,625(S) | 5,967(S)   | 8,967(S)    | 10,524(J)   | 8,485(S)    | 8,456(S)   |           | 11,350(J) | 8,173(J)  | 9,173(J)  | 8,716(S) |
| TOTAL    |        | 4,125(J+S)           | 9,369(J+S) | 13,581(J+S) | 20,104(J+S) | 18,344(J)   | 13,982(J)  | 25,709(J) | 29,041(J) | 27,354(J) | 36,579(J) |          |
|          |        |                      |            |             |             | 14,304(J+S) |            |           |           |           |           |          |

\* Assembled from Simmons (1979:185)[S] and Jones (1979:122-129)[J].



reduced during the revolt and post-revolt times. Within the central New Mexico overview area, only Isleta Pueblo continued to be occupied into the last phase of Spanish colonial administration of the colony. Throughout the colonial period efforts were made to induce nomadic Apaches, Navajos, and Comanches to establish permanent settlements, which were referred to as *reducciones* (Simmons 1969:16). A third class of Indians were the Christianized Indians known as *genizaros*, living in villages practicing a blend of Pueblo and Hispanic cultural traditions (Swadesh 1974; Horvath 1977 and 1979; Chavez 1979). *Genizaros* were often sent to settle frontier communities, such as Cerro de Tome and Valencia which were built south of Albuquerque in 1739 and 1740, respectively (Hackett 1937: 401-402; Chavez 1979:199). Belen was also settled at this time, and probably overlapped with Los Jarales (SANM I:869). Los Jarales, another *genizaro* village, was settled later, and by 1776 had 209 people in 49 families (Chavez 1979:199). These *genizaro* villages served to buffer the colony from Apache attacks (Thomas 1940:18).

The Camino Real was the lifeline connecting colonial centers at Chihuahua, El Paso, and Santa Fe. Though there were well-established camps along the route, it was a dry, desolate trip lasting 40 to 50 days between Santa Fe and Chihuahua. The ruins of the Piro pueblos and pre-revolt haciendas were among some of the stopping places (*parajes*) noted by Bishop Pedro Tamaron y Romeral in 1760 (Adams 1953-54:(29)), by Fray Agustin de Morfi in the period 1778-1782 (Thomas 1932), and by the increased numbers of caravans of traders and colonists (Moorhead 1958). However, the presence of Apaches and Comanches along the southern Rio Grande kept the colonists at bay throughout the 18th century (Thomas 1940:62-64; Kenner 1969:49).

As early as 1693 Vargas endorsed the feasibility of settlement of the Rio Abajo. An investigation of the fiscal matters related to resettlement was requested in 1772 (Thomas 1940:43), and resettlement was made a royal requirement (SANM I:1171). No doubt this requirement resulted from some overcrowding in the existing settlements. It was not until 1800 that Governor Fernando Chacon (1794-1805) was officially instructed to begin resettlement in the vicinity of Socorro.

Governor Chacon was instructed to mark lands for construction of a church, designate lands for

houses, establish the limits of farms and lay out streets. An army of 15 to 20 men was to clear the *acequias*, and construct barracks. The orders further stated that these men were to be married and in possession of their own household equipment. Permission was given to purchase oxen and farm tools for distribution to the settlers. In no case, however, could settlers come to the new town if emigration would weaken their home community. The Governor was cautioned against weakening the village of Sabinal, located between Belen and Socorro (SANM I:1171). The new town was to preserve the name and patron saint of the original Socorro settlement.

In March 1800, the Governor submitted a report of the progress being made in the resettlement of the Piro pueblos (SANM I:1155). After inspecting the lands surrounding Socorro, Sevilleta and Alamillo, the Governor determined that Alamillo could be resettled in the shortest amount of time. Sixty-two families and 21 soldiers were sent to Alamillo. The settlers were so poor that they had to be provided with one year's provisions, firearms, seed for crops, tools, and oxen. The bill shown in Table 17 was submitted with the Governor's report.

The provincial governor was directed to begin settlement of Alamillo in June 1800, and to wage "vigorous" war against Indians, presumably Apaches, living in the San Mateo and Magdalena Mountains. Further, he was directed to resettle Socorro, then Sevilleta, and Senecu (SANM I:1199). An unsigned report, dated July 5, 1800, states that the settlers of Sevilleta had constructed a fortified plaza and had planted garden and forage crops (SANM I:1266). This seems inconsistent with the order to settle Alamillo first, but a letter to the New Mexico provincial governor dated August 1, 1800 grants permission to settle Alamillo and Sevilleta concurrently in order to economize on planting crops and repairs to *acequias*.

Alamillo is seldom mentioned in the literature after 1800. Sevilleta was well established by March 1805, when the Governor of New Mexico sent a surgeon (Cristobal Larranaga) to vaccinate children in Sabinal, Sevilleta, and the "*paraje*" of Valverde against smallpox (Bloom 1924:5, 7). Sevilleta was described by Zebulon Pike in 1807 as the last settlement before entering the "wilderness" on his forced march from La Jara, Colorado to Chihuahua (Jackson 1966:4-7-408).

Table 17

Statement for the New Settlement of Alamillo<sup>\*</sup>

|                                          |    | Pesos, reales, gr. |   |    |
|------------------------------------------|----|--------------------|---|----|
| Oxen . . . . .                           | 60 |                    |   |    |
| Steel Coal Axes. . . . .                 | 12 | 047                | 0 | 00 |
| Iron Crow Bars . . . . .                 | 4  | 146                | 0 | 00 |
| Chisels. . . . .                         | 4  | 005                | 2 | 03 |
| Adze . . . . .                           | 12 | 026                | 4 | 00 |
| Plowpoints and Nails . . . . .           | 16 | 033                | 4 | 00 |
| Hoes--half mark. . . . .                 | 18 | 041                | 2 | 00 |
| Trowels. . . . .                         | 6  | 007                | 4 | 00 |
| Almud and half-almud (measures). . . . . | 2  | 000                | 4 | 00 |
| Adobe molds . . . . .                    | 12 | 003                | 0 | 00 |
| Shovels. . . . .                         | 12 | 001                | 4 | 00 |
| Cow hides, straps, barrows . . . . .     | 24 | 002                | 0 | 00 |

Gross Amount 730-4-3

Weapons and ammunition delivered to Don Antonio de Arce

|                         |                                       |
|-------------------------|---------------------------------------|
| 8 lbs. of gun powder    | 12 old firearms belonging to the king |
| 400 small loose bullets | 20 caliber packages [?]               |

600 pesos for 400 fanegas of corn for the maintenance of the settlers

<sup>\*</sup>  
from the WPA translation of the S.A.N.M. I:1155

Sibilleta (sic) is situated on the east side (of the Rio Grande) and is a regular square, appearing like a large mud wall on the outside, the doors, windows and (sic) facing the square, and is the neatest and most regular village I have yet seen.

Pike remarked that Sevilleta was the meeting place for the annual caravan journeying to the south. During the time he was there 15,000 sheep had been herded for the drive through the Jornada del Muerto to Chihuahua. A guide with Pike's party told him that Sevilleta was the location of recent battles with Apaches. Sevilleta was still a frontier settlement in 1812 when Pedro Bautista Pino traveled to the Cortes in Spain to report on conditions in New Mexico (Carroll and Haggard 1942:69). Pino recommended that a presidio be established in the old town of Socorro, and that the wall surrounding Santa Fe be disassembled and sold so that the proceeds could be used to rebuild a much needed presidio at Valverde (Carroll and Haggard 1942:71, 79).

A circular, dated July 5, 1815, sent to all

jurisdictions sought the names of industrious colonists to resettle Socorro, San Pascual, and the "ancient pueblo of Manzano" (SANM I:1104). The circular stated that these settlements were needed to help solve the problem of insufficient farm land for settlers. In November 1817, and again on August 1, 1818, a representative of the 70 "residents of the new settlement of the abandoned Pueblo of Socorro" petitioned the provincial governor for the official documents of settlement (SANM I:890 and 382).

The Spanish, and later the Mexican, governments issued land grants to encourage orderly settlement of lands not occupied by the Pueblos. Grants of various types were made. Lands were granted to individuals for meritorious service to the Crown, or were sold to persons of means to add revenue to colonial coffers. Individual land grants were considered private property, and often changed names as they were sold or inherited. Community land grants were made to groups of people for the establishment of town sites or settlements consisting of individual allotments for home sites (sitio) and farmlands

(suerte) and areas designated for communal grazing lands (ejido). Regardless of the type of grant, provisions for improvements had to be fulfilled before the title to the land was confirmed. In most cases improvements included residency requirements, construction of individual and communal structures and facilities, cultivation of arable lands, and, in some cases, maintenance of a militia (Swadesh 1974:17).

The documentation of the types of settlements and facilities built on any of the colonial period grants is scant. Records of the Spanish Archives of New Mexico contain, in most cases, only the names of the settlers, the date of the claim, a vague description of the boundaries, and a reference to the proposed use of grant lands. Proceedings of the boundary adjudication hearings conducted in Territorial courts contain much information collected in an attempt to precisely define the limits of the land grant claims and to trace the settlement history of the lands, but contain little information about settlement patterns and land-use practices. A brief historical sketch of the colonial land grants within the Central New Mexico Overview area is given in Table 18.

Diego de Padilla appears to have been among the first Hispanos to reclaim land occupied by his family before the Pueblo Revolt. The Lo de Padilla land grant encompassed lands between Isleta on the north, the Sandia Mountains on the

east, the Rio Grande on the west and the former hacienda of Francisco de Valencia on the south (Surveyor General Case 248: Reel 30). The colonial documents are incomplete, but 1718 is usually given as the date of the grant (Bowden 1969:1634). Residents of Socorro received title to lands in 1818, but these early documents of Socorro history were destroyed in a fire (Bowden 1969:181-182).

Carlos Gavaldon, on behalf of 68 residents of Nuestra Senora de los Dolores de Sevilleta, requested title to lands of the former pueblo of Sevilleta in May 1819 (SANM I:214; Survey General Case 95: Reel 22: Frames 13-16). In June 1819 the grant was confirmed, and the boundaries established as Sabinal at the ruins of the hacienda of Felipe Romero on the north, Alamillo Arroyo on the south, the Ladrones Mountains on the west, and east to the "opposite" side of the San Lorenzo Arroyo. The north boundary of the Sevilleta Grant was in conflict with the south boundary of the earlier established Belen Grant. Both used the ruins of the hacienda of Felipe Romero, a landmark that would become the subject of considerable debate in the later hearings of the Surveyor General.

Pedro Ascue de Armendaris, Collector of Tithes and formerly first Lieutenant of the garrison at San Elizario in Chihuahua, petitioned the Governor of New Mexico in November 1819 for a tract of land at Valverde (Surveyor General Case

Table 18

Spanish Land Grants in the  
Central New Mexico Overview Area

| Applicant        | Name of Grant                              | Petition Date | Date of Possession |
|------------------|--------------------------------------------|---------------|--------------------|
| Diego de Padilla | Lo de Padilla                              | 1718          | 1718?              |
| Carlos Gavaldon  | Town of Socorro                            | 1818          | 1818               |
| For 68 residents | Nuestra Senora de los Dolores de Sevilleta | 1819          | 1819               |
| Pedro Armendaris | Valverde Grant                             | 1819          | 1819               |
|                  | Fray Cristobal Grant                       | 1820          | 1820               |
|                  | Addition to Valverde Grant                 | 1820          | 1820               |
| Bartolome Baca   | Bartolome Baca Grant                       | 1819          | 1819               |

33: Reel 16: Frames 29-32). Although the stated purpose was for land to cultivate and as pasturage for livestock, Armendaris also pointed out that the tract was along the Camino Real and would be used by travelers. Valverde was a well-established paraje as early as 1805 (Bloom 1924:5). The land at Valverde was inspected by colonial administrators in late November and found to be unoccupied. This raises some question about the types of facilities and structures built at parajes, as well as questions about whether the land was really inspected. The Valverde Grant was confirmed on December 4, 1819. The stipulations of the grant were that Armendaris begin construction of corrals, houses, and enclosures for fields, that his men be well armed, and that travelers be furnished with water and feed for their animals. Armendaris petitioned for additional land in May 1820, claiming that he had already established a large hacienda, outbuildings, corrals and a farm on lands within the original Valverde Grant (Surveyor General Case 33: Reel 16: Frames 36-39). Additional lands, including the Ojo del Muerto, Analla Springs, and other more arid lands in the Jornada del Muerto, were conveyed to Armendaris on June 1, 1820 as the Fray Cristobal Grant. At the same time lands to the northwest of the Valverde Grant were given to Armendaris to accommodate his rapidly expanding sheep herds (Surveyor General Case 34: Reel 16: Frames 16-17).

Bartolome Baca, Captain of the volunteer militia of Albuquerque and a resident of Tome or San Fernando, petitioned the Governor for a tract of land east of the Abo Mountains in February 1819 (Surveyor General Case 126: Reel 24: Frames 23-24). The land, known as the Torreon, included the Monte del Cibolo on the north, Ojo del Cubero on the South, Estancia Springs on the east, and the Abo Mountains in the west. Baca intended to use the grant as a ranch for pasturing sheep, cattle, and horses under the watch of herders and armed men who would protect them from roving enemy Indians. Baca also pledged to cultivate those lands he could irrigate from spring-fed reservoirs he intended to construct. The lands were inspected in September 1819, and subsequently conveyed to Baca to oversee settlement.

In the last three years of Spanish rule lands below Socorro and east of the Manzano Mountains were claimed, if not actually settled. The era of Spanish rule came to an end in 1821 when New Mexico became part of the Independent Republic of Mexico under the Treaty of Cordova. Mexican rule

lasted only 27 turbulent years (1821-1846) in New Mexico. That short time was marked by the expansion of settlement beyond the Rio Grande corridor, and the growth of commercial networks that transformed New Mexico from a terminal point to a critical link in North American trade (Meinig 1971:19, 24).

#### Mexican Frontier Settlement Patterns

The Mexican Government continued the colonial practice of granting lands for settlement and grazing tracts. In fact, under Mexican administration more land was settled and more grants were made than in the long Spanish occupation of New Mexico (New Mexico State Planning Office 1971:19). Grants expanded the Mexican claim to lands that were coveted by the Republic of Texas (established in 1836), and threatened by the United States policy of Manifest Destiny. Procedures for acquisition of lands were somewhat modified in this period. The Colonization Law of Iturbide, enacted in January 1823, provided for two types of land grants - the empresario grant, and grants made by the ayuntamiento (Land Title Study 1971:21).

The empresario grant was made by the governor to a promoter who contracted for colonization of a designated area. The empresario was required to settle about 200 families on the land, and to complete settlement within 12 years in order to retain the grant (New Mexico State Planning Office 1971:21). The Land Title Study states that no empresario grants were made in New Mexico, but this statement appears to be contradicted by petitions and testimony in various land grants made during the terms of Governor Manuel Armijo (1827-1829; 1837-1844; 1845-1846), one of New Mexico's most controversial political figures.

Individuals could receive grants by appeal to the ayuntamiento, or town council. The Colonization Law defined five land measurement terms which corresponded with different land-use patterns (New Mexico State Planning Office 1971:21-22). A vara, the basic unit of land measurement, measured three geometrical feet. A labor was a square, 1,000 varas on each side, granted to farmers. Stock raisers received at least a sitio, which was a square league, or 5,000 varas on each side. A hacienda consisted of five sitios.

The Colonization Law was amended in 1824, giving



preference to Mexican citizens and limiting grants to individuals to 11 leagues. The 11 leagues were divided into tracts for grazing of no more than six leagues, one league of arable land, and four leagues of land "dependent on the season" (New Mexico State Planning Office 1970:22). Frequent changes in the official authorized to make grants and the procedures for obtaining title in the Mexican period would later cause problems for the territorial adjudicators.

Although Navajo raids caused the abandonment of the Armendaris Land Grants in 1824 (SANM I:1217), and the abandonment of the Bartolome Baca Land Grant in 1833-1834 (Surveyor General Case 126: Reel 24: Frame: 40), the area of Hispanic settlement expanded in the Mexican period. Meining (1971:27) has characterized the expansion

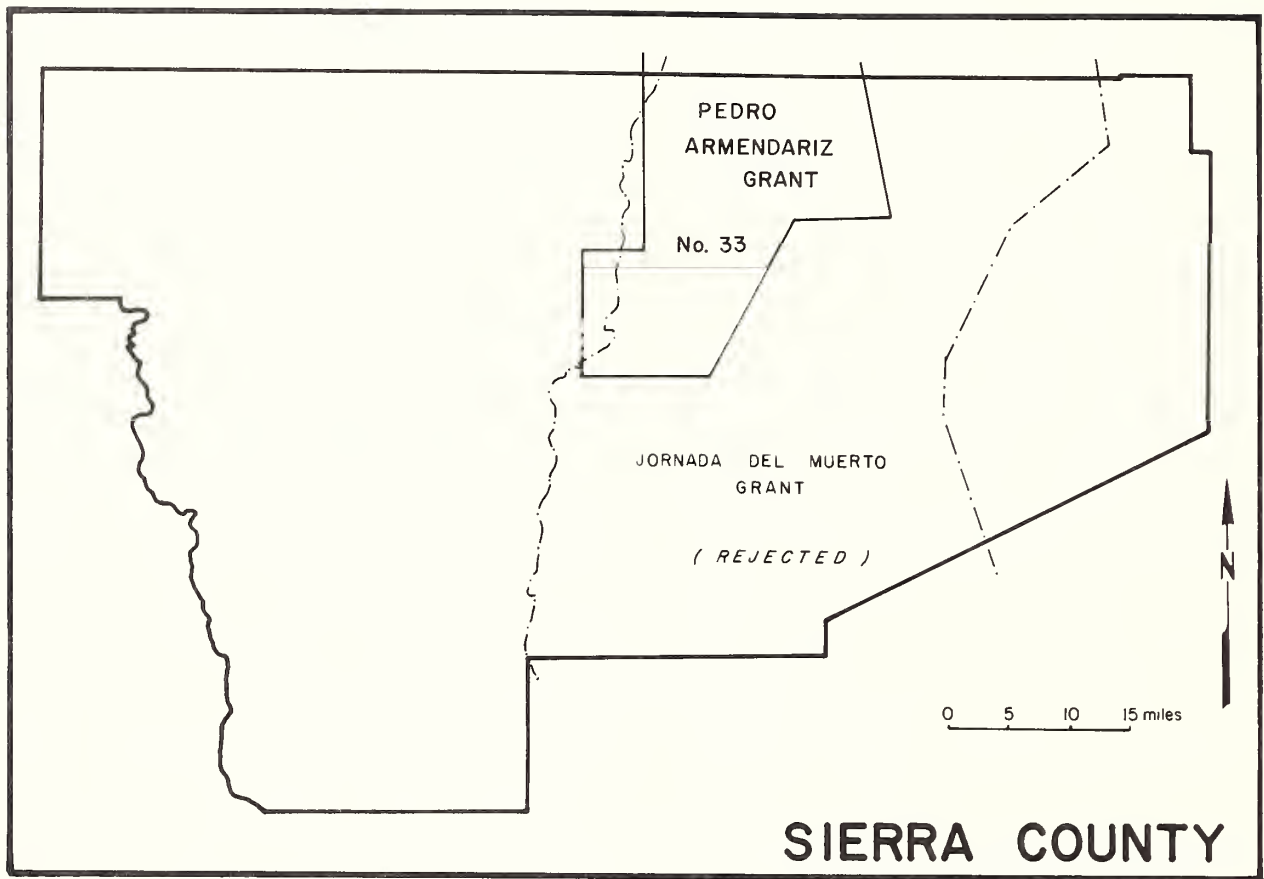
of settlement in this period as "a little known event of major importance." At least 11 land grants were made in the Central New Mexico Overview Area during the Mexican period (Maps 15, 16, and 17). The majority of these grants were in the former province of the Salinas Pueblos, east of the Manzano Mountains. A short account of the founding of each grant is given in Table 19.

In July 1823, peasant farmers who had been working land near the settlement of Manzano for Bartolome Baca petitioned for a grant of land known as the Casa Colorado. They were responding to a provincial decree, dated June 23, 1813, to consolidate scattered ranchos into plaza-centered towns in order to protect the settlers against Indian attacks (Surveyor General Case 29: Reel

Table 19

Mexican Land Grants in the  
Central New Mexico Overview Area

| <u>Applicant</u>                                               | <u>Name of Grant</u>                  | <u>Petition Date</u>                 | <u>Date of Possession</u>        |
|----------------------------------------------------------------|---------------------------------------|--------------------------------------|----------------------------------|
| Jose Maria Perea<br>and 42 residents of<br>the town of Manzano | Casa Colorado                         | July 12, 1823                        | July 30, 1823                    |
| Antonio Chaves                                                 | Arroyo de San<br>Lorenzo              | February 16, 1825                    | April 20, 1825                   |
| Manuel Trujillo<br>and 67 others                               | Town of Manzano                       | September 22, 1829                   | November 28, 1829                |
| Nerio Antonio<br>Montoya                                       | Nerio Antonio<br>Montoya              | February 28, 1831                    | December 12, 1831                |
| Manual Sanchez<br>and 19 others                                | Town of Tajique                       | March 9, 1834                        | December 24, 1834                |
| Jose Chavez Garcia<br>de Noriega                               | Nuestra Senora de<br>Guadalupe Mine   | December 24, 1840                    | October 21, 1842                 |
| 27 residents                                                   | Town of Torreon                       | February 15, 1841                    | March, 1841                      |
| Santiago Padilla<br>and 26 others                              | Town of Chilili                       | March 8, 1841                        | March 20, 1841                   |
| Antonio Sandoval                                               | Town of Estancia<br>Bosque del Apache | October 5, 1845<br>November 24, 1845 | October 7, 1845<br>March 7, 1846 |
| Juan B. Vigil-Alarid,<br>Antonio Jose Rivera,<br>Michael Houck | Jornada del Muerto                    | December 28, 1845                    | March 5, 1846                    |



Map 15. Spanish and Mexican Land Grants in Sierra County, New Mexico (after Bowden 1969:146).

12: Frame 8). The grant was located between the southern boundary of the Tome Grant and the ruins of the pre-Revolt settlement of Las Nutrias. Casa Colorado was a prosperous hacienda and trading establishment operated by the Chaves family when the Texan-Santa Fe expedition passed through in 1841 (Kendall 1847:394-395). Casa Colorado was an established rancho on the Camino Real throughout the Mexican Period (Moorhead 1958:10).

Antonio Chaves of Belen appealed to the Provincial Deputation on February 16, 1825, seeking lands on which to expand his farming and ranching business (SANM I:218; Surveyor General Case 79: Reel 21: Frames 10-12). The lands that Chaves requested overlapped with the Socorro and Sevilleta grants. The Governor, Bartolome Baca, believed, however, that the benefits of settlement at the Arroyo San Lorenzo outweighed the legal complications of overlapping lands. He listed as benefits that the settlement would block one of the access routes by which the "savages" attacked Socorro and Sevilleta, that Chaves might serve as an example to others who

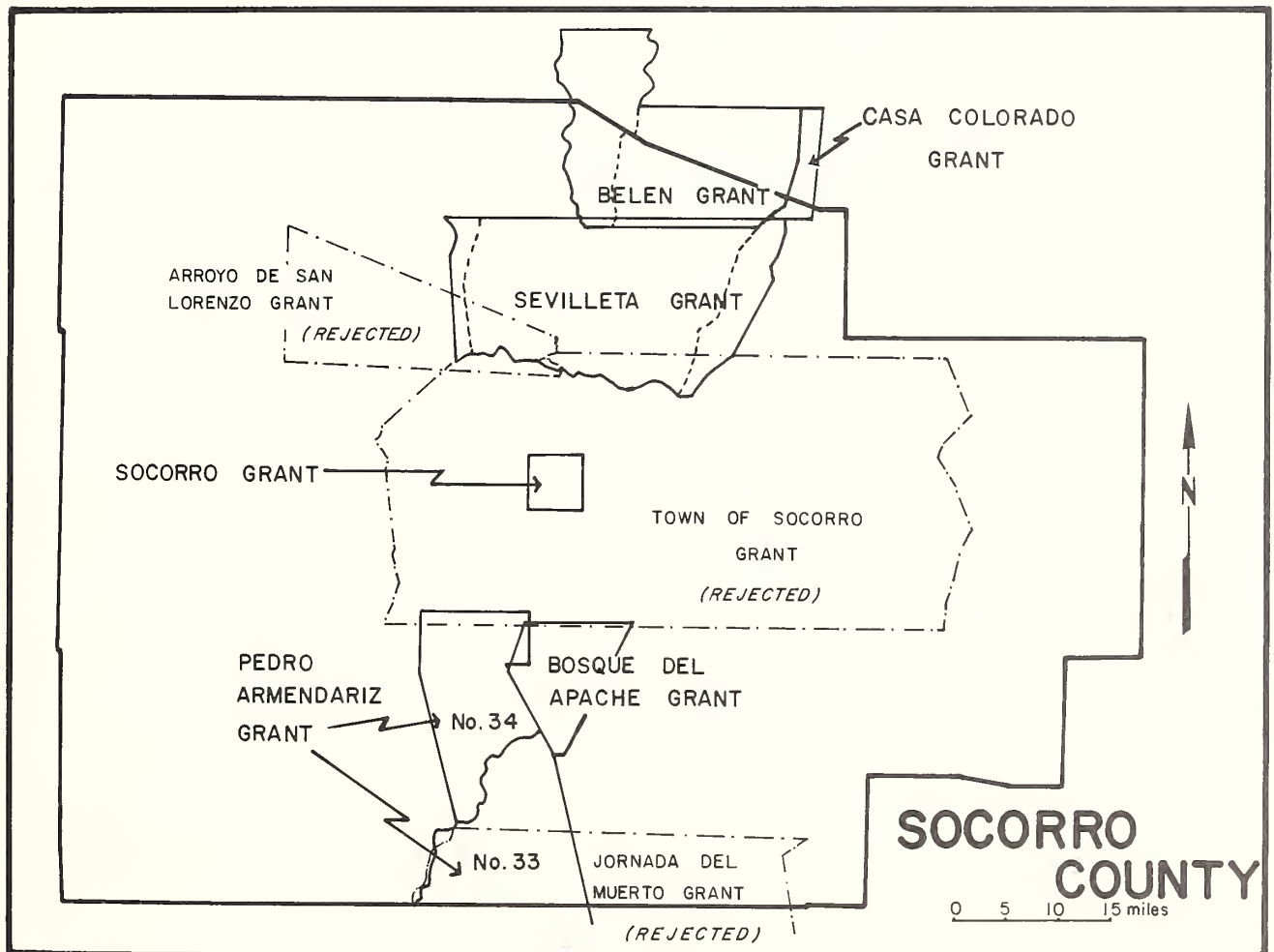
would resettle the Bosque del Apache and San Pascual, that Chaves could provide employment for many peasants, and finally, that residents of Socorro and Sevilleta had sufficient grazing lands (Surveyor General Case 79: Reel 21: Frames 12-14). Baca also justified his actions by stating that Chaves had lost a substantial number of livestock to Navajo raids and needed less crowded conditions than those of Belen in which to reestablish his herd. What Baca did not say was that the Arroyo de San Lorenzo Land Grant might serve as a buffer to protect his substantial holdings from attack as well. The lands were delivered to Chaves in April 1825, and remained in the Chaves family until 1850 when they were sold to the Luna and Garcia families (Surveyor General Case 79: Reel 21: Frame 27).

On September 22, 1829 a representative of the town of Manzano petitioned the ayuntamiento of Tome for lands extending from the Torreon, a landmark within the Bartolome Baca Land Grant, to the old mission of Abo, and from the Mesa de los Jumanes to the mountains on the west, no doubt the Manzano Mountains (SANM I:1013). From

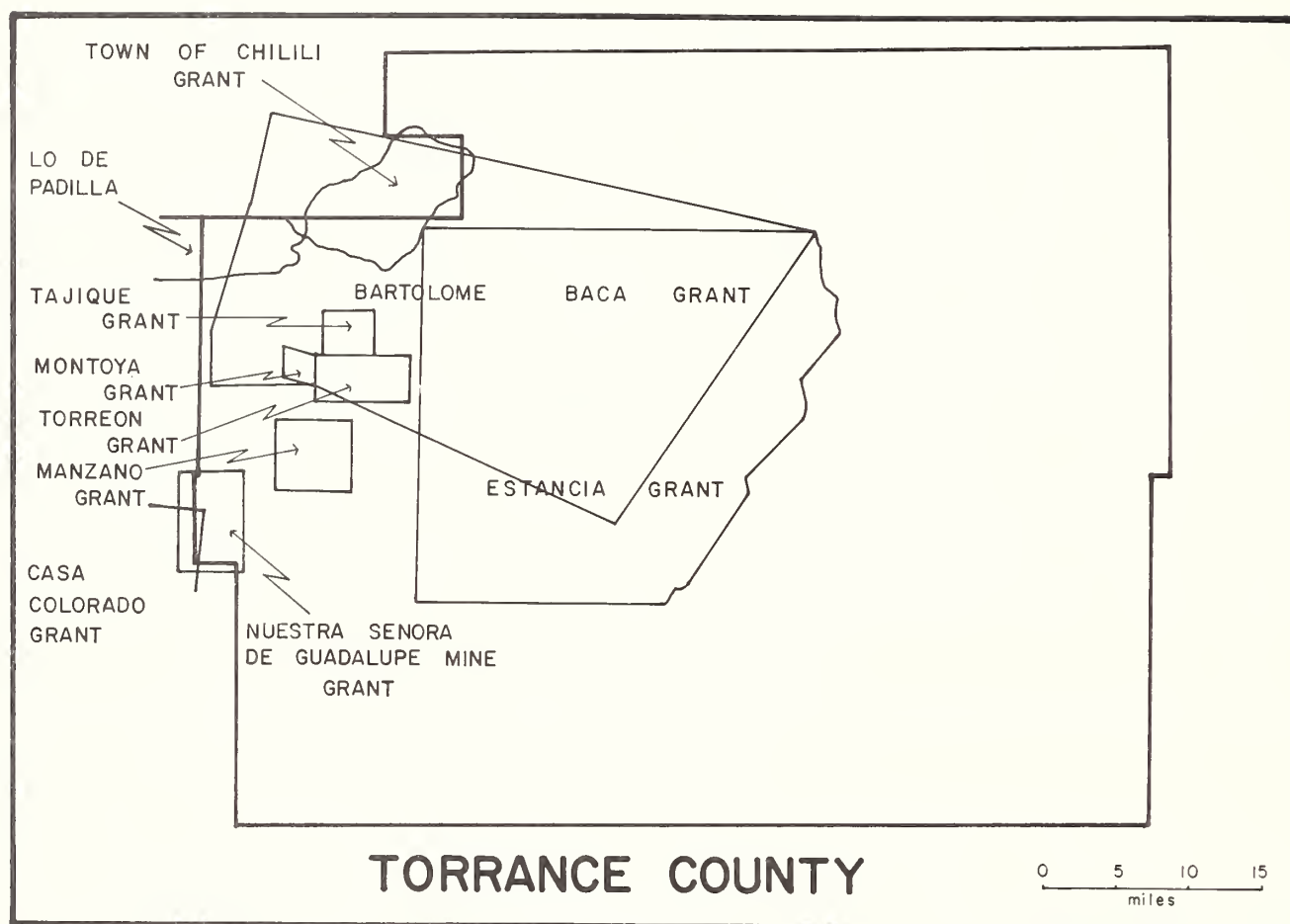
testimony in the Casa Colorado Land Grant case, and from documents found in the records of the Manzano Land Grant Commission (Hurt 1941a:29) it appears that Manzano was a recognized settlement as early as 1823. Settlers pledged to construct a town site, to cultivate arable lands, to contribute labor to the community and to defend it against attack (Surveyor General Case 23: Reel 15: Frame 18-21). The ayuntamiento considered the grant and noted that the arable lands were within the Baca Land Grant. With Baca's permission, four square leagues were granted to the town of Manzano on November 28, 1829.

Nerio Antonio Montoya of Valencia petitioned the ayuntamiento of Tome for one-half league in a canyon, one league from the town of Manzano. Montoya's petition, dated February 28, 1831, explained that the lands that his wife would inherit in Valencia would be too small to support

their large family (Surveyor General Case 51: Reel 18: Frame 7-8). He does not say anything about lands that his natal family might have held in the area. Perhaps this means only that he recently migrated to New Mexico. The land that Montoya sought included the highest part of the Canyon Mountain ridge, the Apache Rancheria (evidently a topographic feature) on the east, Cubero Spring on the south, and the Ojo de en Medio on the west (Surveyor General Case 51: Reel 18: Frame 9-11). Montoya was granted the land on November 12, 1831 and took possession one month later. When Montoya sold the grant in 1848 he transferred to the new owners not only title to the land, but substantial improvements including 424 grape vines, a three-room wood house, 86 peach and apple trees, 19 jars of brandy, the rights to the acequia, and the wall surrounding the vineyard (Surveyor General Case 51: Reel 18: Frame 12).



Map 16. Spanish and Mexican Land Grants in Socorro County, New Mexico (after Bowden 1969:162).



Map 17. Spanish and Mexican Land Grants in Torrance County, New Mexico (after Bowden 1969:216).

The Town of Tajique Grant was another made within the boundaries of the original Bartolome Baca Land Grant. Manuel Sanchez, a representative of 20 residents of Valencia, petitioned for one-half league, north of the Torreon Land Grant on March 9, 1834 (Surveyor General Case 21: Reel 15: Frame 13). The grant was needed to provide adequate farm land not available at Valencia. Because planting season was near, the acting Governor of New Mexico permitted the settlers to begin cultivation, with the understanding that the grant was subject to confirmation by the departmental assembly (Surveyor General Case 21: Reel 15: Frame 14-15). The Alcalde of Valencia subdivided the arable land into seventeen tracts, one assigned to each family residing on the grant in December 1834, when the grant was confirmed (Surveyor General Case 21: Reel 15: Frame 15-16). In addition to the arable land the alcalde allotted land for a town site and common grazing land. The boundaries were established in the most general terms:

on the north, at a pine tree marked with a cross in the Canon de los Migas; on the east, at a lone pine; on the south, at a thicket of cedars a little above the Canon de los Pinos; and on the west, at a pine marked with a cross on the Mesita de la Cueva.

Two other grants were made within the original claim of the Bartolome Baca Land Grant. One was made to the town of Chilili, the other to the town of Torreon. Governor Manuel Armijo issued a decree granting lands of the former Tiwa Pueblo of Chilili to Santiago Padilla and 26 other people (Surveyor General Case 11: Reel 13: Frame 5-6). The tract extended from the Ojo de Los Casos (Las Casas?) on the west, to the brow of the Cibola on the east, and on the south to the Canyon of Chilili. The northern boundary was not described, but the tract was limited to four square leagues (Surveyor General Case 11: Reel 13: Frame 18). Armijo required the poverty stricken group of settlers to remain upon the



property for a period of four years in order to retain title to the tract (Surveyor General Case 11: Reel 13: Frame 4-6).

Testimony of witnesses to the Surveyor General taken in 1881 states that the original town site of Chilili was abandoned about six years after the grant was made because the water supply diminished. One woman, describing the plight of the townspeople, said that the women wore the hair off their heads carrying jars of water to the town (Surveyor General Case 11: Reel 13: Frame 51-54). A new plaza was established three miles south of the original town, but not all of the residents moved to it. Some people returned to their home villages along the Rio Grande (Surveyor General Case 11: Reel 13: Frame 83-84).

The Torreon Land Grant was petitioned on February 15, 1841 by Nerio Antonio Montoya on behalf of 27 residents of Valencia (Surveyor General Case 22: Reel 15: Frame 1-2; 16-17). Their petition asked for a tract of land in the vicinity of Torreon Spring, near the old farm of Bartolome Baca, where they might raise crops needed to support their families. The Alcalde of Tome supported the claim of the petitioners saying that they had not sufficient farm lands in Valencia. The grantees were placed in possession of the grant in March 1841, each resident receiving 100 varas of farm land (Surveyor General Case 22: Reel 15: Frame 5-6; 20-11).

In the last year of Mexican rule three land grants were made within the Central New Mexico Overview area. Antonio Sandoval, a prominent and wealthy resident of Albuquerque, received three land grants during the years of Mexican rule. These lands were primarily grazing tracts, and were in addition to lands that he controlled near Albuquerque (Surveyor General Case 154: Reel 28). Two of the three grants were within the Central New Mexico Overview Area; they were the Bosque del Apache and Estancia Land Grants. The first land grant Sandoval received was the Agua Negra Land Grant, a grazing tract located on the Pecos River (Surveyor General Case 35: Reel 16). The Bosque del Apache Land Grant was located on the Rio Grande, south of the Socorro Land Grant, east and north of lands claimed by Pedro Armendaris. Sandoval requested the tract, to be used for farming, on November 24, 1845, and was placed in possession of the land on March 7, 1846 (Surveyor General Case 35: Reel 16: Frame 1-3).

Sandoval received the extensive Estancia Springs Land Grant in October 1845. He requested that the lands be given to him in consideration of his long and distinguished record of service to New Mexico, and to repay the substantial loans he had made to the government (Surveyor General Case 70: Reel 20: Frame 20, 31). Sandoval later conveyed the grant to his nephew Gervacio Nolan in 1848 (Surveyor General Case 70: Reel 20: Frame 16).

The Jornada del Muerto Land Grant was the last Mexican period grant made in the study area. The Jornada del Muerto, 125 miles long and six days travel through a barren, waterless desert, separated El Paso del Norte and Socorro. Juan Bautista Vigil-Alarid, Antonio Jose Rivera, and Michael Houck petitioned Governor Armijo for a grant in the Jornada on December 28, 1845. They requested lands bordered by the Mesilla de Contadero on the north, Robledo on the south and the Rio Grande on the west (Surveyor General Case 26: Reel 16: Frame 2-3). The petitioners pledged to dig two water wells along the Camino Real for the use of travelers, to employ convict laborers, and to establish a garrison for the protection of travelers (Surveyor General Case 26: Reel 16: Frame 12-14).

The Jornada del Muerto grant overlapped with the Armendaris-Fray Cristobal Land Grant. Although Armendaris left the land in 1824 after being repeatedly attacked by Navajos (SANM II:3069), he still held claim to the lands and protested the boundaries of the Jornada del Muerto Land Grant (SANM I:1217). Rivera and Vigil were forbidden to begin any improvements on the land until the suit by Armendaris was settled. The "invasion" of New Mexico by the United States Army of the West in August 1846 halted further consideration of the Armendaris claim to the Jornada del Muerto.

Mining did not come to be an important economic venture in the Central New Mexico Overview area until the mid 19th century, but a valuable mineral deposit would not go unclaimed. In December 1840, Jose Chavez Garcia de Noriega applied for a grant of land containing a silver vein. The boundaries of the claim, located two to three leagues south of Manzano, read as vaguely as any treasure seeker could expect:

on the north, by a cave at the foot of the Manzano Mountain; on the east by two large pine trees; on the south, by a white bluff

having the form of a pillar; and on the west,  
by a very thickly wooded arroyo.

Garcia was placed in possession of the Nuestra Senora de Guadalupe Mine on October 21, 1842. Two weeks later Garcia received additional lands on which to graze animals used at the mine, and land where he could build a smelter and housing for the miners (Court of Private Land Claims n.d.: Frames 1-2). Almost immediately after receiving title to the mine and surrounding lands, Garcia relinquished the property to the Alcalde of Tome, Jose Pino, in payment of a debt. Pino owned the mine until 1846. Josiah Gregg (Moorhead 1954:124), who was a visitor to New Mexico between 1831 and 1840, says that the mine was not profitable because of the hard matrix in which the vein was encased.

By the close of the Mexican period there were settlements of many different types and sizes east of the Manzano Mountains as well as along the Rio Grande. Bloom (1913-15:(1) 14-15) lists those settlements that were on the mail route between New Mexico and Chihuahua in 1833. In the Rio Abajo, he lists eleven settlements classified by size and administrative organization:

1. Valverde \_\_\_\_\_ Rancho
2. Sabinal \_\_\_\_\_ Plaza
3. Belen \_\_\_\_\_ Pueblo and Ayuntamiento
4. Sandia \_\_\_\_\_ Pueblo
5. Casa Colorado \_\_\_\_\_ Plaza
6. San Fernando \_\_\_\_\_ Plaza
7. Jarales \_\_\_\_\_ Plaza
8. Sevilleta \_\_\_\_\_ Plaza and Pueblo
9. Enlames \_\_\_\_\_ Plaza
10. Socorro \_\_\_\_\_ Pueblo and Ayuntamiento
11. Socorrito \_\_\_\_\_ Plaza

Moorhead (1958:107) lists the towns and campsites along the Camino Real. The stops include those settlements on Bloom's lists, plus Rancho de la Parida, the Hacienda of Luis Lopez (located on both sides of the Rio Grande), and the parajes at Valverde and Fray Cristobal (Map 18). To the lists of Bloom and Moorhead can be added the plaza settlements at Manzano, Chilili, Tajique, and Torreon, and the ranches established by Bartolome Baca, Antonio Chaves, Nerio Antonio Montoya and Antonio Sandoval on their respective land grants. The types of structures and facilities built by rancheros and sheepherders on grazing land grants are not generally described in land grant documents or recorded among the observations of travelers. Likewise, the Rio



Map 18. The Camino Real in the 18th and Early 19th Centuries (after Moorhead 1958:10).

Grande settlements located on the Camino Real, or as it later was called the Chihuahua Trail, have been described by traders and travelers, while the settlements located east of the Manzano Mountains are not well documented in the Mexican Period archives.

The change of name from the Camino Real to the Chihuahua Trail was the result of a policy that would have far-reaching consequences for trade patterns in North America. Trade between the United States and New Mexico began in 1821 when

Mexico lifted the Spanish ban on trade with foreign governments. The Santa Fe Trail refers to those routes (Map 19) that connected the two countries, along which flowed goods manufactured in the United States and the products of New Mexico mines, traps, and herds. American traders expanded their markets into Chihuahua and California in the 1830s, thereby creating in New Mexico an important depot for trade south and west (Meinig 1971:19). The most widely read and objective chronicle of the Santa Fe and Chihuahua trade is "Commerce of the Prairies", written by Josiah Gregg in 1844, which describes the natural and cultural environments of New Mexico and Mexico in the period 1831 to 1840.

Of the settlements within the Central New Mexico Overview area, Gregg has little to say, except to reinforce the picture of the southern Rio Abajo and Manzano Mountains as "wilderness" or frontiers. Gregg passed through the southern New Mexico settlements on his way to Chihuahua, most likely in August 1835. Ten days journey from Santa Fe brought Gregg to the southern-most settlements, which the editor of his journal lists as La Joya de Sevilleta, La Parida and Socorro (Moorhead 1954:269 fn 9). Thirty miles beyond the last settlement Gregg came to the ruins and deserted farms of Valverde, which he says were abandoned in 1825 after repeated Navajo attacks (Moorhead 1954:269).

From Valverde to El Paso Gregg records no settlements, only a series of parajes where travelers camp and water their livestock (Maps 18 and 19). Gregg notes that even mails do not travel regularly over the Chihuahua Trail because of increasing Indian attacks (1954:267), a point reiterated by Bloom (1913-15:(2) 37). Bloom suggests that the increasing raids on Rio Grande villages in the 1830s were a result of decimation of plains buffalo herds, which caused nomadic Indians to raid Rio Grande sheep herds.

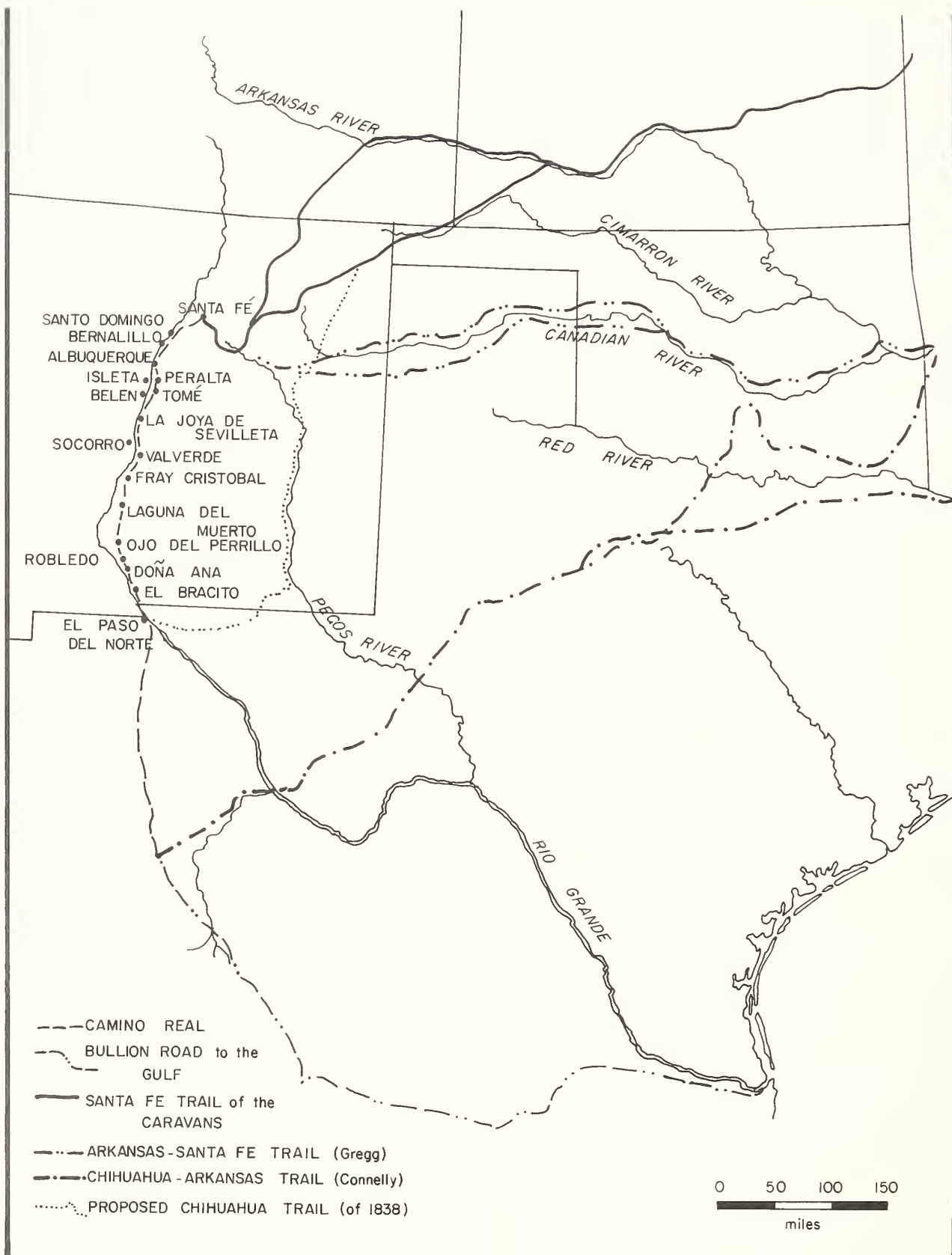
Other documents (McNitt 1972) show that the raids were primarily staged by Navajo groups attacking from the west and northwest, and not by Plains Indians. McNitt (1972:75) describes an attack on Lemitar that took place on June 5, 1835 in which 1,000 sheep and goats were taken from the townsmen. Two days later, June 7, Navajos stampeded livestock through Socorro plaza. A group of Socorro residents chased the Navajos to Ojo de la Culebra, in the Magdalena Mountains west of Socorro, but were so greatly outnumbered that they abandoned the chase (McNitt 1972:75).

Trade caravans were often accompanied by military escorts through the Jornada del Muerto to protect them from Navajo and Apache attacks.

Trade along the Santa Fe and Chihuahua Trails does not seem to have had much contact with or to have been of benefit to the settlements and ranches along the eastern slope of the Manzano Mountains. Gregg mentions the village of Manzano in connection with mining the saline lakes. The lakes, an important resource to the Salinas pueblos, continued to be used in the Mexican Period. Although the salines were public property, the danger of Apache attack, according to Gregg (Moorhead 1954:124-125), inhibited access to the salt, and inflated the price of salt in the market place.

A less complimentary description of New Mexico was written by George Wilkins Kendall, editor of the New Orleans Picayune newspaper, who was arrested with the Texan-Santa Fe Expedition in 1841. The Texan-Santa Fe Expedition members were accused of spying, and were arrested near San Miguel. Kendall was with a party of prisoners who were marched through the Rio Grande villages to Chihuahua where they were imprisoned. When Kendall was released he wrote a narrative of the expedition, published in 1844, in which he condemns everything Mexican (Kendall 1847). Thomas Falconer, an English lawyer who was traveling with the Americans, also left his memoirs of the forced march. Falconer's 1843 description of the Rio Abajo settlement is in agreement with that of Kendall, though Falconer has fewer disparaging remarks to make about the villages and the people.

The prisoners reached Casa Colorado in October. Kendall (1847:394-395) describes Casa Colorado as a collection of little adobe houses and a large hacienda supported by a trading establishment owned by the Chaves family. He notes that the houses were built with oblong adobes, and the fences were constructed with large square bricks four times the size of the adobes used in house construction. Each house is fenced to separate the gardens from neighboring property. With this observation his objectivity ceases. Describing the area between Casa Colorado and Socorro, Kendall criticizes Hispanic farming practices, saying that "under Anglo-Saxon cultivation the region might support five times the population it now contains." But, he cautions, the region could not develop unless the vast distances to markets could be overcome. He says nothing about



Map 19. Roads to Chihuahua, 1821 - 1846 (after Moorhead 1958:104-105). Reproduced by permission of University of Oklahoma Press.



the need for additional water were the population to expand five times. Socorro, the last settlement before El Paso, was described by Kendall (1847:400-402) as a town occupied by a pack of "thieving, cheating, swindling scoundrels," and drunken Apaches who sell plunder taken in Mexico to the Rio Abajo villagers. Apaches camped on the edge of Socorro rode out to see the prisoners. Kendall thought one of the Indians to be a "dignified savage," more than he could say about any of the Hispanic villagers he met.

Although not unbiased, travelers reports of the New Mexican settlements along the Santa Fe and Chihuahua trails provide useful information concerning village life at the close of the Mexican Period.

#### Village Life on the Eve of American Conquest

The 1827 census of New Mexico (Table 20) provides useful information concerning the distribution of the population, and an interesting classification of the settlers based on their occupation. Only four settlements within the Central New Mexico Overview Area are listed on the census. They are Tome, Belen, Sabinal, and Socorro. The populations of the plazas and ranchos east of the Manzano Mountains are not listed but are, more than likely, included in the census figures for Tome and Belen. The combined population of the four settlements is 5,194; the largest population settled at Tome (2,043).

The census lists 1,038 farmers in the four settlements, and provides confirmation of the assumption that the majority of settlers were engaged in agriculture on a subsistence level. The 237 day laborers were probably employed in some aspect of farming and stock raising. Mining was not an important economic venture in the Mexico Period (Carroll and Haggard 1942:90; Christiansen 1963:24-25).

In the four settlements there were 218 craftsmen and 18 merchants. Village industries were limited to weaving, to producing small amount of wine, and to providing the settlers with implements, dry goods, and other stores needed to maintain farms and ranches. The reports that accompanied the 1827 census, and the chronicles of the Santa Fe and Chihuahua trade, support the view that stock raising and trade among the villages, as well as between Hispanic villagers and Indians, were the most important revenue producing activities of the day. Josiah Gregg

(Moorehead 1954:107-112) was amazed to find that farm implements were limited to the hoe and a rather clumsy wooden plow drawn by oxen. Fields were not always fenced, but when they were large adobe bricks were used to construct walls. Gregg observed that the preferred way to keep livestock from trampling crops was to graze animals on tracts far from agricultural land, or under the watch of a herder. The Manzano Mountain land grants were often used by people from the Rio Grande villages as grazing tracts. All farms were irrigated from the acequia madre, the main or mother ditch, that diverted water from rivers or springs, and delivered water to individual fields according to a schedule that allowed for equitable use by all members of the community.

All the acequias for the valley of the Rio del Norte (Rio Grande) are conveyed from the main stream, except where a tributary of more convenient water happens to join it. As the banks of the river are very low, and the descent considerable, the water is soon brought upon the surface by a horizontal ditch along an inclined bank, commencing at a convenient point of constant-flowing water - generally without dam, except sometimes a wing of stones to turn the current into the canal (Moorehead 1954:108).

The list of crops reported by Gregg is limited to wheat, "Indian" corn, and chili. He mentions that potatoes are a recent cultigen, and that cotton, apples, peaches, apricots, and punche or native tobacco are only occasionally found in New Mexico gardens.

By far the most important "product of the soil" in New Mexico Gregg identifies as the abundant grazing lands of nutritious grama grass. Stock raising ranged from small-scale sheep and cattle herding to commercial ranching. As the Chihuahua trade grew, so did the export of sheep from New Mexico to northern Mexico. The 1827 census lists gross numbers of sheep, goats, horses, cattle and mules in the alcaldias of Albuquerque, Santa Fe and La Canada. The Alcaldia of Albuquerque included settlements at Albuquerque, Isleta Pueblo, Tome, Belen, Sabinal, Socorro, and Laguna, and reported 2,550 cattle, 155,000 sheep and goats, 192 horses, 868 mules and 105 mares (Carroll and Haggard 1942:43, 46). These figures are higher than those given for the Alcaldia of Santa Fe and the Alcaldia of La Canada. Josiah Gregg (Moorehead 1954:134) reports that at least 200,000 and perhaps as many as 500,000 sheep were

Table 20

New Mexico Census, 1827\*

| Report showing a general census of the territory of New Mexico with respect to the population and classes of inhabitants found there |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          |              |         |           |         |                     |       |     |     |        |
|--------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|---------|--------|-----------|------------|----------|-------------|-----------------|----------|----------|--------------|---------|--------|----------|--------------|---------|-----------|---------|---------------------|-------|-----|-----|--------|
| Number of citizens in each settlement within the territory                                                                           |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          |              |         |           |         |                     |       |     |     |        |
|                                                                                                                                      | Farmers | Craftsmen | Lawyers | Miners | Merchants | Physicians | Surgeons | Pharmacists | School Teachers | Students | Notaries | Day Laborers | Priests | Vicars | Clerigos | Civil Status |         |           |         | Widows and Widowers |       |     |     |        |
|                                                                                                                                      |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          | Hospitals    | Schools | Unmarried | Married |                     |       |     |     |        |
|                                                                                                                                      |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          |              |         |           |         |                     |       |     |     |        |
| National company of Santa Fé and supernumerary invalids                                                                              | 000     | 000       | 0       | 0      | 0         | 0          | 0        | 0           | 0               | 0        | 0        | 000          | 1       | 0      | 0        | 0            | 0       | 153       | 207     | 115                 | 115   | 9   | 1   | 599    |
| Santa Fé, capital                                                                                                                    | 467     | 101       | 0       | 0      | 12        | 0          | 1        | 0           | 1               | 0        | 0        | 264          | 0       | 0      | 0        | 0            | 2       | 2,098     | 2,087   | 450                 | 450   | 31  | 44  | 5,160  |
| Tesuque, Indian pueblo                                                                                                               |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          |              |         |           |         |                     |       |     |     |        |
| Vado, Spanish settlement                                                                                                             |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          |              |         |           |         |                     |       |     |     |        |
| Pecos, Indian pueblo                                                                                                                 | 401     | 93        | 0       | 0      | 2         | 0          | 0        | 1           | 0               | 0        | 0        | 217          | 1       | 0      | 0        | 0            | 1       | 709       | 799     | 634                 | 634   | 53  | 64  | 2,893  |
| Cochité, Indian pueblo                                                                                                               |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          |              |         |           |         |                     |       |     |     |        |
| Santo Domingo, Indian pueblo                                                                                                         | 416     | 63        | 0       | 0      | 3         | 0          | 0        | 1           | 0               | 0        | 0        | 94           | 1       | 0      | 0        | 0            | 1       | 548       | 491     | 472                 | 472   | 38  | 41  | 2,062  |
| Xemes, Indian pueblo                                                                                                                 |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          |              |         |           |         |                     |       |     |     |        |
| Zia, Indian pueblo                                                                                                                   | 285     | 90        | 0       | 0      | 5         | 0          | 0        | 1           | 0               | 0        | 0        | 113          | 1       | 0      | 0        | 0            | 1       | 460       | 227     | 279                 | 279   | 51  | 61  | 1,357  |
| Santa Ana, Indian pueblo                                                                                                             |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          |              |         |           |         |                     |       |     |     |        |
| Sandia, Indian pueblo                                                                                                                | 265     | 97        | 0       | 0      | 4         | 0          | 0        | 1           | 0               | 0        | 0        | 99           | 0       | 0      | 0        | 0            | 1       | 389       | 460     | 195                 | 195   | 39  | 50  | 1,328  |
| San Felipe, Indian pueblo                                                                                                            |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          |              |         |           |         |                     |       |     |     |        |
| Alameda, pueblo                                                                                                                      | 253     | 81        | 0       | 0      | 3         | 0          | 0        | 1           | 0               | 0        | 0        | 88           | 0       | 0      | 0        | 0            | 1       | 399       | 453     | 198                 | 198   | 27  | 35  | 1,310  |
| Alburquerque, <i>villa</i>                                                                                                           | 397     | 85        | 0       | 0      | 15        | 0          | 0        | 1           | 0               | 0        | 0        | 113          | 1       | 0      | 0        | 0            | 1       | 848       | 900     | 347                 | 347   | 46  | 59  | 2,547  |
| Isleta, Indian pueblo                                                                                                                | 291     | 96        | 0       | 0      | 4         | 0          | 0        | 0           | 0               | 0        | 0        | 103          | 1       | 0      | 0        | 0            | 0       | 373       | 345     | 316                 | 316   | 24  | 33  | 1,407  |
| Tomé, pueblo                                                                                                                         | 397     | 56        | 0       | 0      | 7         | 0          | 0        | 1           | 0               | 0        | 0        | 101          | 1       | 0      | 0        | 0            | 1       | 712       | 692     | 289                 | 289   | 28  | 33  | 2,043  |
| Belén, pueblo                                                                                                                        |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          |              |         |           |         |                     |       |     |     |        |
| Sabinal, pueblo                                                                                                                      | 388     | 93        | 0       | 0      | 8         | 0          | 0        | 1           | 0               | 0        | 0        | 143          | 1       | 0      | 0        | 0            | 1       | 555       | 424     | 339                 | 339   | 49  | 62  | 1,768  |
| Socorro, pueblo                                                                                                                      | 253     | 69        | 0       | 0      | 3         | 0          | 0        | 0           | 0               | 0        | 0        | 83           | 1       | 0      | 0        | 0            | 0       | 309       | 513     | 261                 | 261   | 14  | 25  | 1,383  |
| Laguna, Indian pueblo                                                                                                                | 376     | 25        | 0       | 0      | 1         | 0          | 0        | 1           | 0               | 0        | 0        | 43           | 1       | 0      | 0        | 0            | 1       | 518       | 395     | 415                 | 415   | 37  | 44  | 1,824  |
| Acoma, Indian pueblo                                                                                                                 |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          |              |         |           |         |                     |       |     |     |        |
| Zuñi, Indian pueblo                                                                                                                  | 417     | 00        | 0       | 0      | 0         | 0          | 0        | 0           | 0               | 0        | 0        | 00           | 0       | 0      | 0        | 0            | 0       | 375       | 316     | 231                 | 231   | 8   | 11  | 1,172  |
| Cañada, <i>villa</i>                                                                                                                 |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          |              |         |           |         |                     |       |     |     |        |
| Santa Clara, Indian pueblo                                                                                                           | 553     | 145       | 0       | 0      | 19        | 0          | 0        | 0           | 3               | 0        | 0        | 239          | 3       | 0      | 0        | 0            | 3       | 1,736     | 1,655   | 1,457               | 1,457 | 98  | 105 | 6,508  |
| San Ildefonso, Indian pueblo                                                                                                         |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          |              |         |           |         |                     |       |     |     |        |
| Pojoaque, Indian pueblo                                                                                                              |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          |              |         |           |         |                     |       |     |     |        |
| Nambé, Indian pueblo                                                                                                                 |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          |              |         |           |         |                     |       |     |     |        |
| San Juan, Indian pueblo                                                                                                              | 417     | 83        | 0       | 0      | 6         | 0          | 0        | 1           | 0               | 0        | 0        | 196          | 1       | 0      | 0        | 0            | 1       | 1,027     | 1,045   | 366                 | 366   | 51  | 60  | 2,915  |
| Taos, Indian pueblo                                                                                                                  |         |           |         |        |           |            |          |             |                 |          |          |              |         |        |          |              |         |           |         |                     |       |     |     |        |
| Pecurís, Indian pueblo                                                                                                               | 503     | 30        | 0       | 0      | 5         | 0          | 0        | 2           | 0               | 0        | 0        | 278          | 1       | 0      | 0        | 0            | 2       | 1,081     | 1,012   | 710                 | 710   | 39  | 54  | 3,606  |
| Abiquiú, pueblo                                                                                                                      | 508     | 48        | 0       | 0      | 6         | 0          | 0        | 1           | 0               | 0        | 0        | 301          | 1       | 0      | 0        | 0            | 1       | 1,120     | 1,088   | 603                 | 603   | 71  | 72  | 3,557  |
|                                                                                                                                      | 6,588   | 1,237     | 0       | 0      | 93        | 0          | 1        | 0           | 17              | 0        | 0        | 2,475        | 17      | 0      | 0        | 0            | 18      | 13,409    | 13,109  | 7,677               | 7,677 | 713 | 854 | 43,433 |

\* Reprinted from Carroll and Haggard (1942:88)

annually driven to southern markets between 1821 and 1840. Between 1819 and 1833, Bartolome Baca was said to have kept 40,000 sheep, 300 mares and 900 cattle on his pastures in the Manzano Mountains (Surveyor General Case 126: Reel 24: Frames 26-27). In all, Baca was said to have owned more than two million sheep and to have employed 2,700 herders (Towne and Wentworth 1946:63; Carlson 1969:29). There were many other wealthy stock owners living in the Rio Abajo, where sheep herds would gather for the annual conducta to Mexico. The figures cited above may be inflated, but the impression remains that the region was important for stock raising.

Gregg found adobe to be the most commonly used building material. The mud was formed into bricks measuring 18 inches long, 9 inches wide and 4 inches high (Moorehead 1954:144). Wood, he says, was seldom used, and then only to build "picket-huts" on ranches and in mining towns. The wealthier residents built their rambling, flat roofed adobe homes according to a plan that mirrored the defensive plaza of the frontier villages. A single tier of rooms arranged around a plaza that could be closed with a huge gate was the general plan (Moorhead 1954:144-145). The rooms were grouped into family apartments, and rooms were added as the family grew. In Casa Colorado Gregg saw a subterranean house, that to him looked like an animal burrow (1954:146).

Gregg suggested that the use of adobe was caused by the want of metal tools. The absence of tools, he believed, inhibited the development of architectural crafts and other industrial arts. Even the Santa Fe trade could not satisfy the need in New Mexico for tools.

The economies of the villages were controlled to a large extent by wealthy patrons, who owned the livestock and controlled access to land, water, and other resources. The patron had far-reaching social and economic control over the lives of the peons, the workers. The patron system has been described by a number of authors (Hurt 1941a; Hawley and Senter 1946; Kluckhohn and Strodbeck 1961; Leonard 1970), who have viewed the system critically or favorably depending upon the writer, the times, and the bias of their study. Closely related to the patron system was the partido, a form of livestock sharecropping. Details of the partido were described by Jose Agustin Escudero, a Chihuahua lawyer who visited New Mexico in 1827. Although his description, written in 1849, may be overly optimistic, it

outlines the important economic and social functions served by the patron and partido systems.

It can be asserted that there were no paupers in New Mexico at that time, nor could there be any. At the same time, there were no large-scale stockmen who could pay wages or make any expenditure whatever in order to preserve and increase their wealth in this branch of agriculture. A poor man, upon reaching the age when one generally desires freedom and sufficient means to subsist and start a family, would go to a rich stockman and offer to help him take care of one or more herds of sheep. These flocks were composed of a thousand ewes and ten breeding rams, which were never separated from the herd as is the practice of stock raisers in other countries. Consequently, in each flock, not a single day would go by without the birth of two or three lambs, which the shepherd would put with the ewe and for the female to suckle without the difficulties which he would have had with a larger number of offspring. The shepherd would give the owner ten or twenty percent of these sheep and an equal amount of wool, as a sort of interest, thus preserving the capital intact.

From the moment he received the flock, the shepherd entered into a contract in regard to the future increases, even with his own overseer. As a matter of fact, he usually contracted it at the current market price, two reales per head, the future increase to be delivered in small numbers after a period of time. With this sum, which the shepherd had in advance, he could construct a house, and take in other persons to help him care for and shear the sheep, which was done with a knife instead of shears. The milk, and sometimes the meat, from the said sheep provided him sustenance; the wool was spun by his own family into blankets, stockings, etc., which could also be marketed, providing an income. Thus the wealth of the shepherd would increase until the day he became, like his overseer, the owner of a herd. He, in turn, would let out his herds to others after the manner in which he obtained his first sheep and made his fortune. Consequently, even in the homes of the poorest New Mexicans, there is never a dearth of sufficient means to satisfy the necessities of life and even to afford the comfort and luxuries of the wealthiest class in the



country (Carroll and Haggard 1942:40-42).

Those who failed to produce a lamb crop for any number of reasons, including disease, drought, and Indian attack, were plunged into debt that could last indefinitely. Though they might not be paupers, debt peonage could hold partidarios and their families slaves to the flock owner. It is because of this that the patron-peon system has been condemned.

Where the church had provided community focus in Spanish New Mexico, the patron and other village associations served to bond communities in the Mexican Period. Twenty-two Franciscan fathers served the 26 Indian pueblos and 102 Hispanic settlements in 1812 when Pino testified to the Cortes (Carroll and Haggard 1942:50). The priests resided in the pueblos and were not often able to travel to the Hispanic villages. In 1828 all Spaniards were ordered to leave Mexico. This would have left New Mexico without clergy, had all followed the order. Yet most of the friars stayed in New Mexico until their deaths, which mainly occurred in the 1830s (Weigle 1976:22).

To fill the need thus created for priests, the "Cofradia de Nuestro Padre Jesus Nazareno," or as it came to be called more frequently, the Penitente Cult, emerged in many Hispanic villages. There is much speculation about the origin and original function of the cofradia, or penitentes. In Spain the cofradia was a fraternal association based on deep devotion to the sacraments and rituals of Catholicism, and strong bonds of social responsibilities among members (Foster 1953:11-17). The cofradia in New Mexico has been called a revitalization movement (Dozier 1970:94). The cult may have come to New Mexico with the earliest colonists, then lay dormant until the need for lay ministry was manifest. By the beginning of the Mexican Period the rites of the penitentes were being practiced in many parts of Hispanic New Mexico (Chavez 1954a; Swadesh 1974:72-74; Dozier 1970:94-95; Weigle 1976). In 1833, Bishop Jose Antonio Laureano de Zabiria criticized the penitentes for the extreme forms of self-scourging and supplication practiced by the hermanos, the brothers of the rites.

To what extent the cofradia functioned in Rio Abajo villages is unknown. Josiah Gregg (Moorhead 1954:181-182) observed flagelettes in Tome during Semana Santa, Holy Week. He interpreted their actions as atonement for past

sins, but did not recognize the procession as part of a larger community organization. Marta Weigle (1976) has summarized the history of the penitentes in New Mexico. It indeed seems that the cult was less noticeable in Rio Abajo than in Rio Arriba communities. It may be that the patron system of Rio Abajo villages was stronger than that in Rio Arriba villages, and this may have prevented or precluded the development of a stronger cofradia.

Neither the patrons nor the hermanos could slow the events that were leading to the demise of the Mexican claim to New Mexico. Throughout the Mexican Period the influence of American merchants was increasing. The Republic of Mexico was not able to provide the New Mexico province with the goods or arms needed to sustain frontier settlements. Every New Mexico governor was put to the test, defending the settlements against Navajo and Apache raids, the increasing boldness of the Republic of Texas, and the demands of an expanding population that had few self-supporting industries.

Manuel Armijo was the governor who gave up the fight. To those who defend his actions, yielding to the Americans was the only solution. The Americans could at least provide military support to quell the escalating Indian attacks, and could supply New Mexicans with tools to develop the mines, farms, and markets to support the population. To his critics, Armijo was a venal, avaricious politician who sold his country for the personal gains he would make in complicity with American business partners. On August 15, 1846, General Stephen Watts Kearny claimed New Mexico for the United States.

#### AMERICANS IN NEW MEXICO TERRITORY 1846 - 1912

##### An American Territory: Conquest and Exploration

The American takeover of New Mexico came after a long period of hostility between and among the United States, Mexico, and the Republic of Texas. New Mexicans blamed Texas and the United States for the 1837 uprising against Governor Albino Perez, and many viewed the Texan-Santa Fe Expedition as an ill-disguised attempt of Texas troops, largely composed of American frontiersmen, to seize New Mexico (D. Weber 1973:74). Americans believed that their claim to the Far West was justified by their "superior" technology, and their "destiny" to control the entire



North American continent and to regulate trade throughout North America. President Polk needed only the slightest provocation to declare the Mexican War, and to annex New Mexico, California, and (sometime earlier) Texas, as United States possessions. The New Mexico takeover appears to have been negotiated long before Stephen Watts Kearny and the Army of the West marched into Las Vegas, New Mexico. Most scholars believe that James Magoffin, an influential American trader and liason to Mexico, arranged the terms of American "conquest" with Governor Armijo (D. Weber 1973:97). Armijo claimed to have had no support from New Mexico troops; New Mexicans claimed that Armijo offered no resistance to the Americans (D. Weber 1973:121-125). The Treaty of Guadalupe Hidalgo brought the end of the Mexican War in 1848. Lands added to the United States by treaty and annexation of Texas brought a major part of the North American continent under American rule. The Treaty guaranteed that Mexican subjects living on annexed lands would be granted the rights of American citizens, or could elect to move to Mexico.

The American occupation of New Mexico followed, in many ways, the same sequence of events as the initial Spanish occupation. American military and geographical explorers joined entrepreneurs, who were already in New Mexico, soon after Kearny claimed the territory. The Americans, for the most part, came with the characteristic intolerance of conquerors. With few exceptions, the reports of the advancing American explorers condemned the Hispanic land-use and cultural practices.

There are numerous journals describing New Mexico in 1846 - 1847 written by soldiers and traders who accompanied the Army of the West to New Mexico and California. Among the most widely read chronicles are Susan Shelby Magoffin's journal, edited by Lamar (1926), Lieutenant Abert's beautiful sketches and diary (Galvin 1970), Lieutenant Emory's official reports (Calvin 1951), Turner's journal (Clarke 1966), Doniphan's report (Connelly 1907) and Ruxton's work (Hafen 1950). The many surveys were part of a comprehensive plan for the Far West that was to ensure orderly settlement, expansion of railway and trade routes, defense against the Indians and a secure southwestern boundary for the United States (Bender 1934:1).

Susan Shelby Magoffin traveled "Down the Santa Fe Trail and Into Mexico" in 1846 - 1847 in a

caravan just behind the Army of the West, reaching the Rio Abajo settlements in late January 1846. She was too preoccupied with the news of an uprising in Taos in which Governor Bent was murdered to say much about the villages she passed through. At Fray Cristobal she noted that this camping place, like that of Valverde, although used by all the southward caravans, offered travelers few comforts.

Lieutenant Emory reached Tome on October 1, 1846, then went on to the verdant agricultural villages of Belen and Sabinal. At La Joya where Emory's party camped on October 2, the villagers warned Emory that 40 Navajos were in the vicinity. Navajos attacked Polvadera on October 3. Emory dispatched troops to the town, but the soldiers arrived too late to assist the assembled townsmen of Polvadera and Lemitar in repulsing over 100 Indian warriors.

Between La Joya and Socorro Emory's party had some difficulty moving wagons across sandy hills. In spite of this difficulty, Emory described the country north of Polvadera as the loveliest in New Mexico (Calvin 1951:83). He quieted his desire to explore the country, and wrote in his diary that the object of this march was not exploration, but war (Calvin 1951:94). From Socorro the army moved south to Valverde, and established camp near the Fra Cristobal range, where they abandoned their cumbersome wagons. The company then moved west through southern New Mexico and Arizona and on to the conquest of California.

Emory's account records the formal military notes of troop movements and difficulties of the march. Emory makes many notes on the flora, fauna, and topography of the country, but his observations are fairly impersonal. The journals of Henry Smith Turner are more personal, offering insight into the observations and anxieties of the foot soldier. Turner notes that a grove of cottonwood trees near Tome was carefully preserved by the owner, because wood was scarce and provided the only material from which carts could be made (Clarke 1966:77).

Lieutenant J. W. Abert, who with Lieutenant Peck and Emory mapped New Mexico for the U.S. Army Topographic Engineers, left an illustrated journal that described the people, villages, ruins, wildlife, and landscapes of many places in New Mexico. Abert marched into the deserted village of Chilili on November 1, 1846. He says

the village was abandoned only two years before (1844) due to the scarcity of water. From Chilili Abert could see the Estancia Basin salt deposits mined for use by villagers throughout New Mexico. Abert traveled to the new plaza of Chilili, then on to Tajique and Torreon. All were small settlements and Abert found the people to be friendly.

The Americans were not so well hailed at Manzano, where they were greeted by an armed contingent loyal to the Mexican government. Manzano was the largest of the settlements located on the eastern flanks of the Manzano Mountains. Abert noted the Indian influence in the architecture of the village, and described the apple groves from which the town took its name. Three mines producing silver, copper and iron were operating in the vicinity. Abert visited and sketched the ruins of Abo and Quarai before leaving the Manzano Mountains.

Upon reaching Casa Colorado, four days travel from Chilili, Abert learned that the Army of the West had entered Chihuahua (Galvin 1970:59). At La Joya, Abert described the beautiful fields located adjacent to the river where crops of corn were grown and where cattle now grazed on the harvest stubble. South of La Joya the landscape and climate changed - the vegetation becoming more desert-like, the river fringed with cottonwoods, the landforms more rugged, and the climate milder. At Sabino on November 9, 1846, Abert found the residents assembled to pursue a band of 50 Navajos who had alarmed the villagers.

Abert moved on toward Socorro on November 10th, where he met a caravan of 70 traders and other regiments of American troops, some moving south toward Chihuahua, others moving north to winter quarters in Albuquerque, some moving west for the conquest of California. The traders and American troops established various camps in the vicinity of Valverde, waiting word about conditions in Chihuahua. An advance party of William Doniphan's troops met Abert's men and the traders at Valverde on November 21, 1846 (Galvin 1970:64-65). William Connelley (1907:270), who described the camp at Valverde years after the event, remembered 500 mounted troops and 300 traders in the Valverde camps. In late November George F. Ruxton, an English writer and military man who had recently come from the conquest of Chihuahua, joined the Abert camp. Ruxton remained at Valverde until the camps broke in early December.

Expecting to remain in the vicinity of Valverde for some time, at least until they received word that travel to Chihuahua could be undertaken with safety, the troops and traders began construction of temporary quarters using material salvaged from the ruins of Valverde. Adobe bricks were used to fashion chimneys, and thatched wood was used to construct the walls of primitive shelters (Galvin 1970:66-67). The troops hunted what game and fowl they could find close to camp, and bought corn, coffee, and a few other supplies at exorbitant prices from the Rio Abajo villagers.

Abert occupied his time exploring the area, drawing, and making friends in the villages. Ruxton hunted, and wrote long journal entries about the deplorable conduct of American soldiers. The camps were disbanded on December 14, 1846. Abert and Ruxton moved north to Santa Fe. Abert's journal of the upriver march is terse, no doubt a testimony to the rigors of a winter campaign. Abert mentions passing a deserted village on the west side of the Rio Grande between Socorro and Lemitar (Galvin 1970:72).

Ruxton complains bitterly about the sloppiness of Socorro, Lemitar, and every other village they passed through. He passed no judgement on San Antonio, a settlement of twelve log cabins occupied by vaqueros and pastores, where the troops camped their first night after leaving Valverde (Hafen 1950:174-179). The traders moved their camp south to Fray Cristobal, where they stayed for five days (Moorhead 1958:168). After marching through the Jornada del Muerto in the company of Colonel Doniphan, the caravan of traders and soldiers was attacked by a regiment of the Mexican Army on Christmas Eve and Christmas Day.

The expansion of the Mexican War severely curtailed trade along the Chihuahua Trail. This trade route would never recover from the war. With the annexation of Texas a shorter route between Mexico and the United States was established; El Paso then replaced Santa Fe as the port of entry (Moorhead 1958:198). The Santa Fe Trail, on the other hand, retained its prominence and profited as the major supply route serving the expanding American frontier. Trade within New Mexico also expanded during the Mexican War. As American troops established outposts, they drew on the local villages for provisions, fodder, and mules for packing their camps. By 1849, one year after the Treaty of

Guadalupe Hidalgo, and the beginning of the California Gold Rush, New Mexico was once again an important depot in trade. This time sheep herds and traders were assembled for drives to the gold fields. Some sheep trails to the south were also maintained.

The Army of the West quickly learned that the conquest of New Mexico would not be completed until the nomadic Indian groups that preyed on the Hispanic villages and sedentary Pueblos had been subdued. James S. Calhoun, Indian Agent in Santa Fe, and the various regiments of the army stationed throughout the Territory diligently reported and investigated the interactions of the Hispanic and nomadic people. Calhoun (Abel 1915:281) reported Jicarillas camped regularly in the vicinity of Manzano, trading in town. In March 1851, Bvt. 2nd Lieutenant of the 2nd Dragoons J. P. Holliday and a force of 44 men tracked Jicarillas to a camp some 60 miles southeast of Manzano. Neighboring Hispanic villagers reported to Holliday that the Jicarillas were not a menace; in fact, the Jicarillas and residents of Manzano formed a mutual defense against Navajos who raided the area (National Archives, Record Group 94; Adjutant General's Office, Letters Received, Albuquerque, New Mexico, March 28, 1851, Holliday to Allen).

Major James H. Carleton was sent to investigate Apache activities in the vicinity of the abandoned Salinas Pueblos in 1853. His journal (1855a and b) makes mention of Apaches only once, to say that they had left the area. The importance of his diary lies in the detailed description he provides of the abandoned Salinas pueblos, and his detailed topographic descriptions. His references to the Manzano Mountain villages are some of the harshest judgements of Hispanic cultural practices.

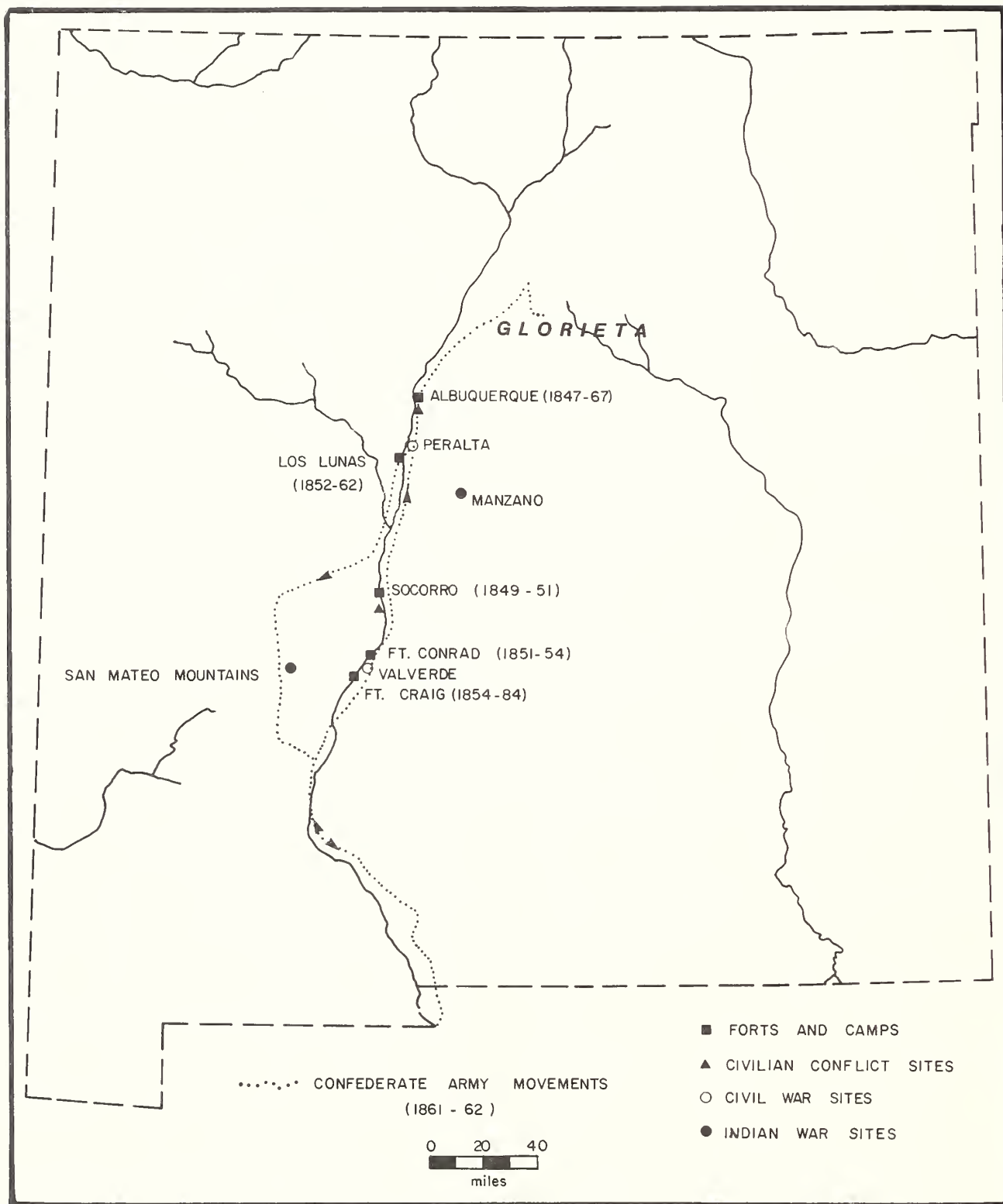
Peaceful times were not to be had in the Rio Abajo, where the muster rolls for 1850 show at least three captains recruiting men to fight the Navajo (Jenkins and Salazar 1974:60). In February 1852, 143 citizens of Socorro County petitioned the Governor of the Territory for more American troops to protect the Rio Abajo villages (Abel 1915:481). To meet the defensive needs of the Rio Abajo, garrisons were sent to Socorro, Albuquerque, Tome, and Dona Ana (Frazer 1968: 34-37), locations that Pino had asked Spain to garrison in 1812. Fort Conrad (Map 20), built in 1851 just east of the ruins of Valverde, provided

some protection to the settlers, but was abandoned in 1854 when Fort Craig (Map 21) was built a few miles south, at a strategic crossing of the Rio Grande. Military camps established at Abiquiu (1849-1851) and Cebolleta (1850-1851) served to protect the Rio Grande settlements from Navajo attacks originating in northwestern New Mexico.

Soon after the Mexican War ended, while the Army of the West was exploring the Territory assessing the requirements for American occupation and subduing the nomadic Indians, various American factions began to contend for dominance of the Far Western frontier. Ranching, mining, land speculation, and mercantile capitalism were among the interests competing. Underlying all of these issues was the question of where New Mexico would stand on slavery, should it become a state (Lamer 1970:72-73; Jenkins and Salazar 1974:7-8). Debt peonage, long practiced in New Mexico, was seen as a correlate to slavery, and it was assumed this practice would ally Hispanic patrons to the Southern cause. Allegiance to the Union and the Confederacy changed with every turn in the Territorial administration.

One of the two Civil War battles fought in New Mexico took place on February 21, 1862 at Valverde, north of Union-held Fort Craig (Whitford 1906; Hall 1960; Lamer 1970:116-117). In a fierce one day battle General H. H. Sibley, Commander of the Confederate forces, defeated Colonel E. R. S. Canby's Union detachment, but the Confederates suffered heavy losses. Marion C. Grinstead (1973:20-23) summarizes the main events of the battle of Valverde in "Life and Death of a Frontier Fort: Ft. Craig, NM, 1854-1885", a well written local history of the fort. Map 22 shows the strategy of the Battle of Valverde.

Union troops under the command of Colonel Nicholas Pino surrendered Socorro to Sibley shortly after the Valverde (Fort Craig) battle (Lamar 1970:117). Sibley then went on to capture Santa Fe on March 10th (Lamar 1970:117). He led the retreat from New Mexico after the indecisive battle at Glorieta, the western state's equivalent of the "high water mark" of the war at Gettysburg. The route of Sibley's retreat to Texas took the Confederates far west of the Rio Grande, through the San Mateo Mountains then east and across the Rio Grande just north of Truth or Consequences. Presumably this route was taken to avoid another battle with the Union forces still

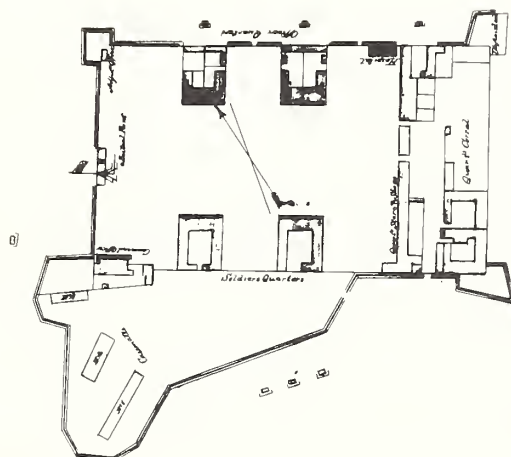


Map 20. Territorial Period Conflicts pertinent to the Overview Area (after Williams and McAllister 1979:86).



# *Military Reservation of* **FORT CRAIG, N.M.**

*Surveyed by order of Major General G. M. Kelly, commanding  
 Dept. of New Mexico. Lat.  $33^{\circ} 38' N$  Long.  $107^{\circ} 00'$  Mag. Variation  $8^{\circ} E$   
 Scale two miles to one mile*

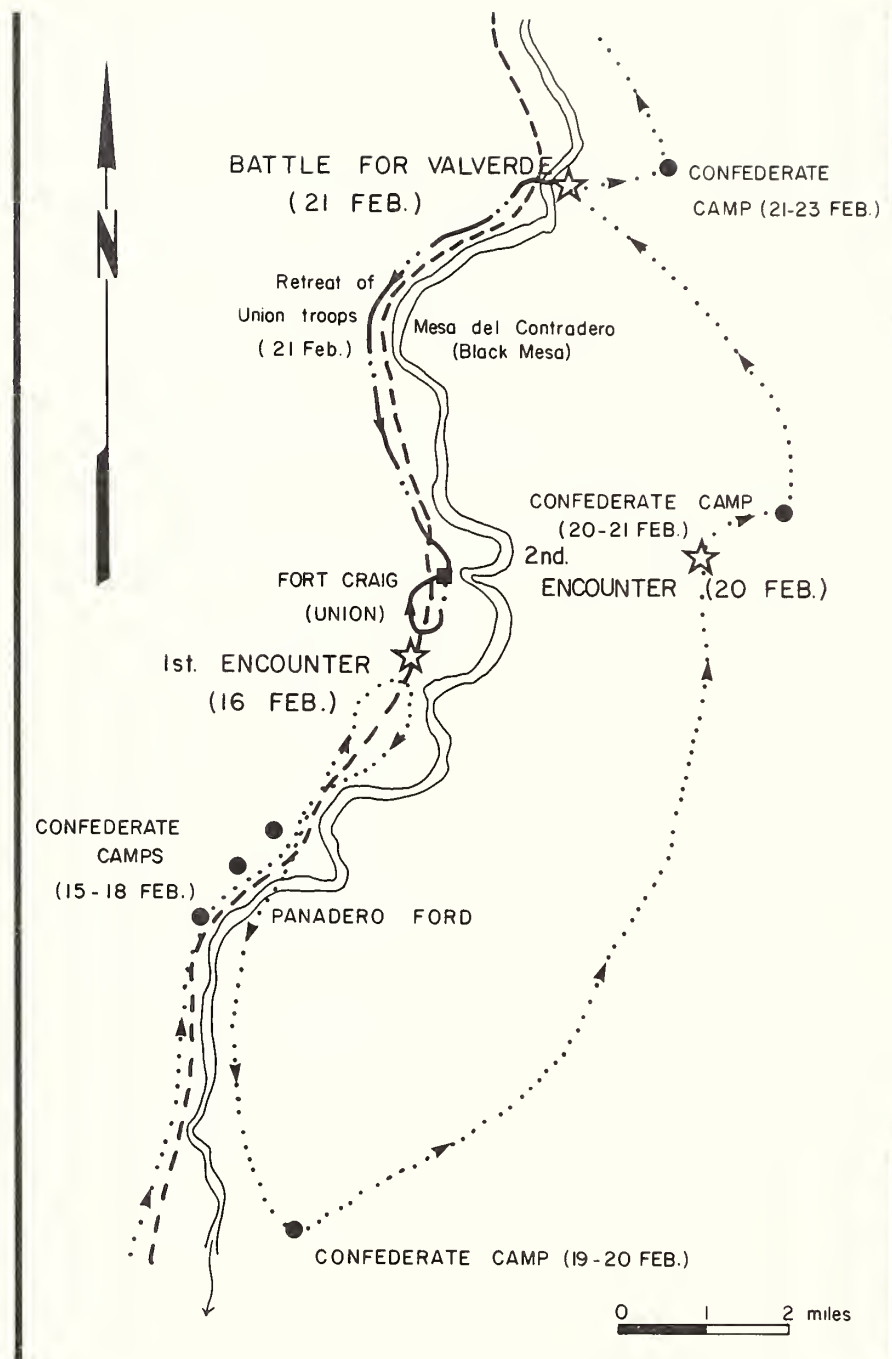


*Scale 2000 Feet to one mile*

*Fort Craig*

*Fort Craig*

Map 21. Fort Craig Military Reservation, as surveyed by the Corps of Engineers.



Map 22. The Battle of Valverde, 1862 (after Beck and Haase 1969:37).

holding Fort Craig (Barbaras and Richard 1980:3-4).

Military action against the Navajos and Apaches continued and intensified after the Civil War battles in New Mexico. Schroeder (1974:174-176) documents Navajo raids on Lemitar in 1836 and 1864. The attacks presumably were staged by Navajos who had established a regular camp some 15 miles west of Lemitar at Ojo de Cibola.

In 1862, New Mexico militia Colonel Christopher (Kit) Carson was ordered by New Mexico military Commander James H. Carleton to pursue the Mescaleros and Navajos, and to place them on a reservation set aside for their use. Carleton had devised a systematic, though controversial, plan to transform nomadic Indian tribes into sedentary agriculturalists. By the beginning of 1863, the Mescalero Apaches were being held at Bosque Redondo on the Pecos River. In December

of the same year the first group of Navajos were brought to Bosque Redondo. Throughout the five years that Bosque Redondo was used as an internment camp public sentiment vacillated about the wisdom of Carleton's approach to pacification of nomadic Indians (Thompson 1976). By 1868, public sentiment was decidedly against Carleton's plan and the Navajos were released to a reservation established in their former homeland in northwestern New Mexico. The Mescaleros had fled Bosque Redondo in 1865, and in 1873 were resettled on a reservation south of Fort Stanton in southeastern New Mexico.

By the mid 1860s the Indian wars in central New Mexico were over, and the area began to exhibit some economic and social stability. Many of the soldiers and merchants who came during the conquest of New Mexico stayed to fight the long campaign for statehood.

#### American Land Law and Hispanic Land-Use: A Conflict of Values

The ultimate conflict between Hispanic and American settlement and land-use practices was apparent from the earliest chronicles of the Santa Fe Trade and reconnaissance reports of American military personnel. American land-use in other frontiers relied upon precisely defined boundaries of private property and principles of economic specialization. Hispanic practices were based on the concepts of a broad-based subsistence economy practiced on lands that included communal holdings as well as exclusive rights. Reconciliation of the two views has never been wholly accomplished. An excellent discussion of the conflict of American and Hispanic land tenure and land-use practices is that by Van Ness and Van Ness (1980:7-11).

To assist in resolving the conflict between Hispanic and American land values and to clear land titles, the Office of the United States Surveyor General was extended to New Mexico in 1854. The first Surveyor General, William Pelham, was charged with the responsibility of surveying the public domain, and establishing the township grid by which tracts of land could be legally described (Westphall 1965:3-4). The Surveyor General's office was also responsible for recommending to Congress appropriate action for lands claimed under the laws and customs of Spain and Mexico (Van Ness and Van Ness 1980:10).

The office was more successful in laying down the lines of public survey than in dealing with the complexities of Hispanic land grants. Pelham set the initial control point of public survey about six miles south of the junction of the Rio Grande and the Rio Puerco, on a hill northwest of La Joyita (Westphall 1965:6). The point is in a room block of the late prehistoric site of "Cerro Indio," recorded by Marshall and Walt (1984:147). This monument established the principal meridian and base line from which the townships and ranges for all of New Mexico were subsequently referenced. Pelham then contracted with deputy surveyors for the monumentation of exterior boundaries of the more densely settled townships. Between 1854 and 1860, the Rio Grande, from Santa Fe to El Paso, was surveyed (Westphall 1965:163).

Pelham also contracted for exterior boundary surveys for lands bordering the Pecos and Canadian rivers. Subdivision surveys, the division of townships into square mile sections, proceeded more slowly. Subdivision surveys were required before land could be claimed under the Homestead Act of 1862 and other settlement legislation. Until 1876 only thirteen townships in the Central New Mexico Overview area had been subdivided (Westphall 1965:162). They were located east of San Antonio, as far as the present location of Bingham, then south twenty-four miles into the Jornada del Muerto. Certainly not a choice location for immediate settlement, this was chosen perhaps because the area bordered many contested Spanish and Mexican land claims. Westphall (1965:17-18) suggests that Pelham chose to survey the Jornada del Muerto because of the potential for artesian well development identified by Brevet Captain John Pope in 1855-1856 for the Secretary of War. Later Surveyors General were directed to confine subdivision surveys to areas of potential and actual agricultural use.

The exterior boundaries of most of the townships in the Central New Mexico Overview Area were surveyed under the Surveyor General Henry M. Atkinson, who served New Mexico from 1876-1884 (Westphall 1965:165). Atkinson also completed subdivision surveys of a large part of the area. Some lands, such as those in the vicinity of Chupadera Mesa and Progresso, New Mexico (located on the northern boundary of the southern parcel of the Cibola National Forest) were not surveyed until much later (Westphall 1965:164-165).

Atkinson's administration was responsible for a significant increase in the area of New Mexico surveyed but, during the same time, land frauds and irregular practices accompanied the surveys (Westphall 1965:24).

Although grazing lands could not legally be surveyed by the Surveyor General's office, Atkinson issued many contracts for lands that could only have been used by stockmen. His supporters would probably say that Atkinson realized that land laws formulated in more verdant regions of the United States were unrealistic in the arid West. His detractors would probably accuse him of having yielded to the growing cattle industry, witnessed by his interests in various New Mexico land and cattle corporations (Westphall 1965:28). In any event, the maps produced during the Atkinson years must be used with caution. In some cases, subsequent resurveys have shown that plats accepted by Atkinson were fraudulent, and could not have been drawn from actual ground surveys. With this caution the maps can still be used to draw the broad picture of settlement in the study area during the Territorial period.

Under various laws designed to encourage the settlement of the Far West it was possible for a citizen to gain legal title to 1,120 acres of land (Westphall 1965:43). The Homestead Act of 1862, the Timber Culture Law of 1873, and the Desert Land Act of 1877 were some of the laws that opened western lands for settlement.

The Homestead Act of 1862 provided 160 acres to settlers who lived on and improved a tract over a five year period. If cash were available, it was possible to secure a final homestead certificate after six months in residence and payment of \$1.25 per acre. After gaining the final homestead certificate, it was then possible through preemption to claim an additional 160 acres by six months in residence and payment of \$1.25 per acre. The Timber Culture Law of 1873 was passed to enlarge the area that could be claimed by settlers seeking lands in the Far West. The 160 acres that could be claimed under the Homestead Act of 1862 was a figure based upon the potential productivity of a similar size tract in more fertile agricultural areas of the United States.

The Desert Land Act allowed entry on 640 acres. At the time of entry the settler was required to pay only 25 cents per acre. Within three years improvement had to be made, and the balance of

\$1.00 per acre had to be paid. Each of these settlement laws is succinctly summarized in Westphall (1965), and discussed in historical perspective in a volume edited by Carstensen (1962). The loopholes in these laws and the cumbersome procedures by which the General Land Office implemented the legislation allowed for much abuse of the system.

Within this overview area, cash sales and the Homestead Act of 1862 were the most common means by which public lands were claimed. Westphall's study (1965:168-169, 170-171, 175-178) indicates that the period between 1882 and 1891 was the most active period of public land claims. Fig. 6 is a gross tabulation of the types of claims made in the Central New Mexico Overview Area during this period. Westphall's maps (1965:165-168, 170-171, 175-178) show the location of townships in which the different types of land claims were made.

Of the 165 townships in the study area, only a small number of townships were involved in public land claims. It would be misleading, however, to assume that settlement occurred only in those townships in which public claims were filed. In fact, the subdivision survey maps show that the population was still more densely settled along the Rio Grande than on the plains east of the Manzano Mountains. Although reporting areas are not the same though time, census figures for the period 1850 through 1880 (Table 21) confirm this general pattern.

County boundaries also reflect this pattern. Until 1870, when the population of New Mexico began to increase rapidly, the state was divided into a small number of large counties. Then, after 1870, county boundaries changed often to divide the state into smaller, more easily managed civil subdivisions. Beck and Haase (1969:41-52) map New Mexico county boundaries from 1850 to 1969. Williams and McAllister (1979:48-49) explain general economic and political factors that caused the realignment of county boundaries in New Mexico. Torrance County was formed from parts of Bernalillo, Lincoln, San Miguel, Santa Fe, Socorro, and Valencia counties in 1905. Socorro County was established in 1852, but assumed its present form in 1921.

Along the river the population was settled in towns and villages, many of which had been occupied since the Mexican Period. Some new river-based settlements were added after the U.S.



military succeeded in quelling Navajo and Apache attacks. Still more were settled when railroads began construction in New Mexico during the period 1879 to 1900. Land holdings along the river were complicated by Hispanic land-use strategies and inheritance customs.

Vara strips, or fields extending at right angles from the acequia madre and leading to the limits of individual land holdings, were the most common settlement pattern exhibited in agricultural villages located along the Rio Grande. Varas became narrower and narrower through time as they were divided equally among heirs. Carlson (1975) discusses the "long-lot" settlement pattern of Rio Arriba county. He observes that the subdivision of long-lots eventually leads to a situation where land-holdings are not economically viable. The same situation occurred in central New Mexico agricultural villages, where by the late 1890s land holdings among the Hispanic villagers were limited by inheritance practices and the legal system now imposed by the American government. Map 23 shows such small holdings claims in Sections 5 & 6 of Township 4 South, Range 1 East in the village of Luis Lopez.

Those settlements on the plains shown on cadastral survey plats of the period 1880 to 1890, display a settlement pattern commonly associated with ranching. Survey plats of townships located east of the Rio Grande show a low density settlement of houses, corrals and other facilities related to ranching (e.g., driveways and vats) located adjacent to surface water sources (Map 24). Control of a critical water source guaranteed exclusive use of surrounding grazing lands. Ranching empires were built by those families and corporations that acquired water sources.

The expansive plains of central New Mexico were eventually involved in the conflict between the growing cattle industry, which developed in New Mexico during and immediately following the Civil War, and settlers who came to claim smaller homestead and desert entry tracts. Westphall (1965:45-47) calculated the number of homestead tracts processed in New Mexico in the period 1880 to 1890, and concluded that many were claimed by devious means, seemingly to amass enough land to graze livestock. That there was much abuse of homestead and other land laws was as widely known as the well established facts and fiction of conflict between the two dominant cultural groups.

Table 21

Central New Mexico Population Figures  
1850 - 1890\*

**Rio Grande Villages**

|                 | 1850 | 1860  | 1880  | 1890  |
|-----------------|------|-------|-------|-------|
| Belen           | 510  | 632   | na    | 685   |
| Los Jarales     | 329  | 437   | na    | 676   |
| Casa Colorada   | 272  | 300   | na    | 214   |
| La Joya         | 440  | 606   | na    | 280   |
| La Joyita       | 186  | 606   | na    | ---   |
| Lemitar         | 420  | 768   | na    | 390   |
| Enlame          | 180  | 152   | na    | ---   |
| Luis Lopez      | 191  | 206   | na    | 238   |
| Parida          | 168  | 44/81 | na    | ---   |
| Polvadera       | 363  | 492   | na    | 381   |
| Sabinal         | 602  | 549   | na    | 379   |
| San Antonio     | 228  | 99    | na    | 460   |
| Socorro         | 543  | 512   | 1,272 | 2,295 |
| Tome            | 615  | 306   | na    | 1,130 |
| Valencia        | 252  | 247   | na    | 494   |
| Bosquecito      | ---  | 92    | na    | 71    |
| Fort Craig      | ---  | 83    | na    | ---   |
| Fray Cristobal  | ---  | 194   | na    | ---   |
| Escondida       | ---  | 78    | na    | 284   |
| Valverde        | ---  | 89    | na    | 370   |
| Paraje          | ---  | ---   | na    | 261   |
| New San Marcial | ---  | ---   | na    | 500   |
| Old San Marcial | ---  | ---   | na    | 111   |
| San Pedro       | ---  | ---   | na    | 168   |
| San Acacio      | ---  | ---   | na    | 319   |
| Carthage        | ---  | ---   | na    | 367   |

**Plains and Mountain Villages**

|                  | 1850 | 1860 | 1880 | 1890 |
|------------------|------|------|------|------|
| Manzano          | 403  | 831  | na   | 658  |
| Chilili          | ---  | 330  | na   | 424  |
| Tajique          | ---  | 351  | na   | 350  |
| Torreon          | ---  | 435  | na   | 363  |
| Quarai & Cienega | ---  | 194  | na   | 331  |
| Punta de Agua    | ---  | 237  | na   | 290  |

\*Sources:

1850 Seventh census of the United States: Population by subdivision of Counties (1853:995).

1860 Eighth census of the United States: Population by Cities, Towns and other subdivisions (1864:571-572).

1883 Tenth census of the United States: Population of Civil Subdivisions (1884:280-282).

1890 Eleventh census of the United States: Aggregate population by minor Civil Subdivisions (1892).

\*\* Note: "na" means not available for any town other than Socorro in the 1880 census.

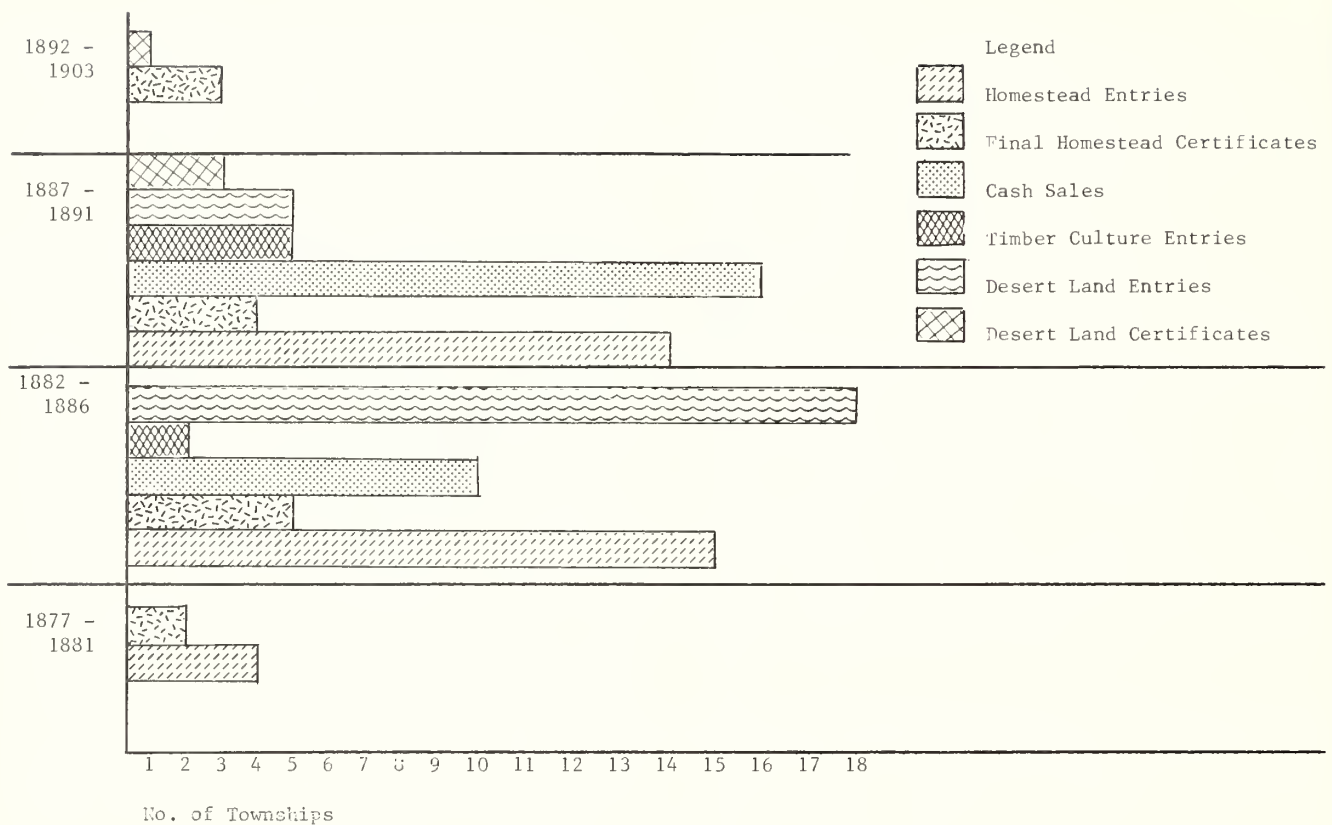


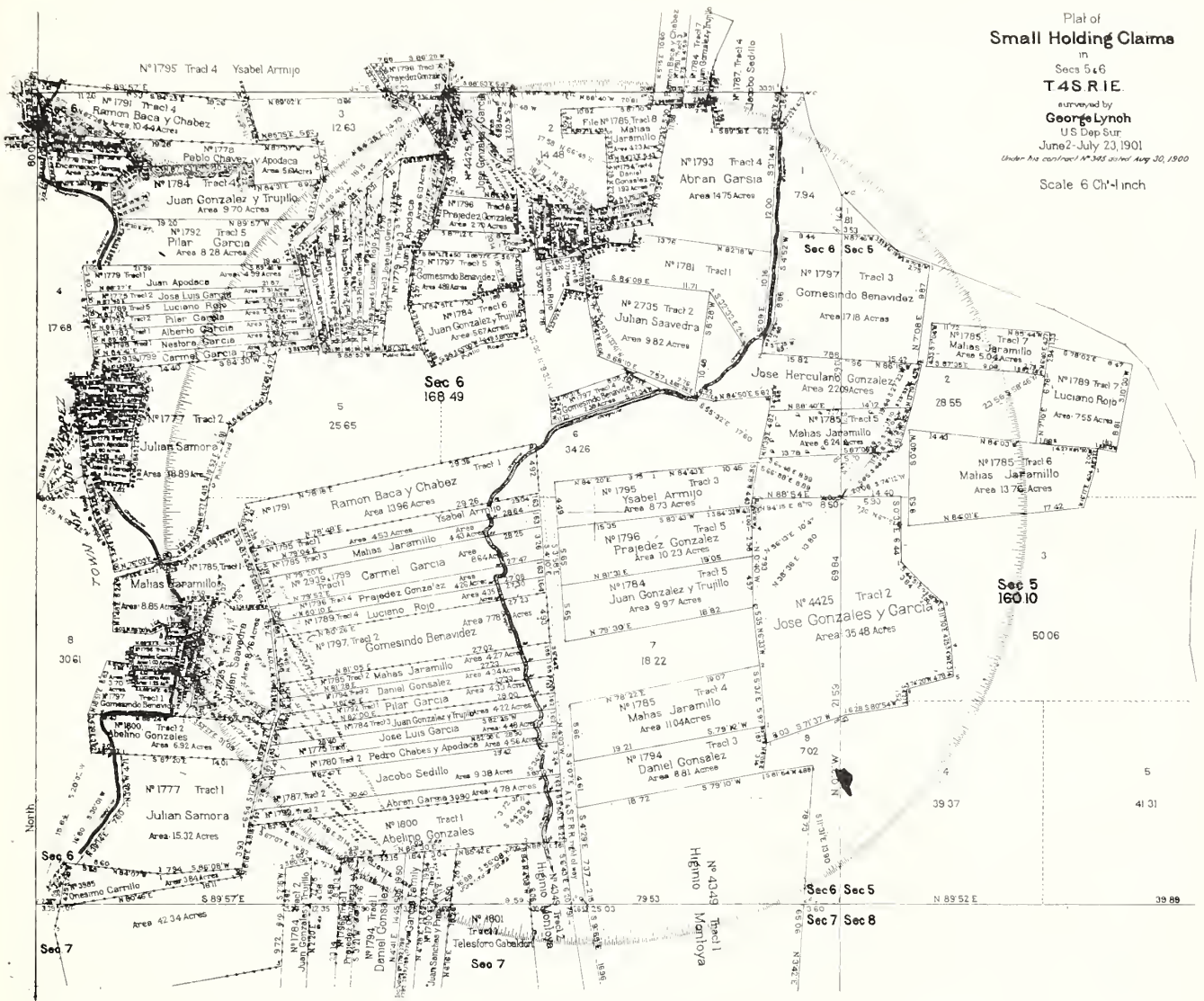
Figure 6. Public land claims in the overview area, 1877 to 1891. (After Westphall 1965).

Nowhere was the conflict between Hispanic and American concepts of land tenure and land-use more obvious than in the adjudication of land grants. Where American land holdings were described by an abstract legal grid, Hispanic land descriptions were tied to real, although vague, geographic markers. In the Anglo system, land-use was regulated by legal title and the nature of individual economic pursuits. Hispanic lands were usufructs based on a widely shared set of land-use values.

Schematically the land-use areas coincide with the distribution of plant communities. Map 25 shows the distribution of plant communities as they existed in 1880. The riparian community was the approximate boundary of Hispanic farm lands, timber resources were found in mountain meadows, and grasslands were used for pasture.

The Office of the Surveyor General was charged with the responsibility of investigating Hispanic land claims and making recommendations concerning the validity of these claims in Congress. Neither the Surveyor General, Congress, nor land

grant heirs found the procedures entirely satisfactory. The New Mexico State Planning Office (1971:28-31) lists a number of reasons the procedures were unsuitable to settle the land claims questions. Few land grant heirs could afford the legal survey of the land or the expense of legal counsel. Others may have feared turning over title documents. The Surveyor General's Office was never sufficiently funded to handle grant cases. The complications of applying Spanish and Mexican land law and custom to American adjudication processes meant that there were long delays in handling cases. A group of ambitious lawyers, judges and politicians, known as the Santa Fe Ring, stepped forward to assist the land grant heirs. In many cases members of the Ring profited more than any of the heirs. Howard Lamar (1970:136-170) presents an excellent summary of the devices used by the Santa Fe Ring to enlarge their personal land holdings while supposedly defending the rights of land grant heirs. After 1879 Congress did not act on any recommendations of the Surveyor General (New Mexico State Planning Board 1971:30). In spite of these problems, 11 land



Map 23. Small Holding Claims in the Village of Luis Lopez.

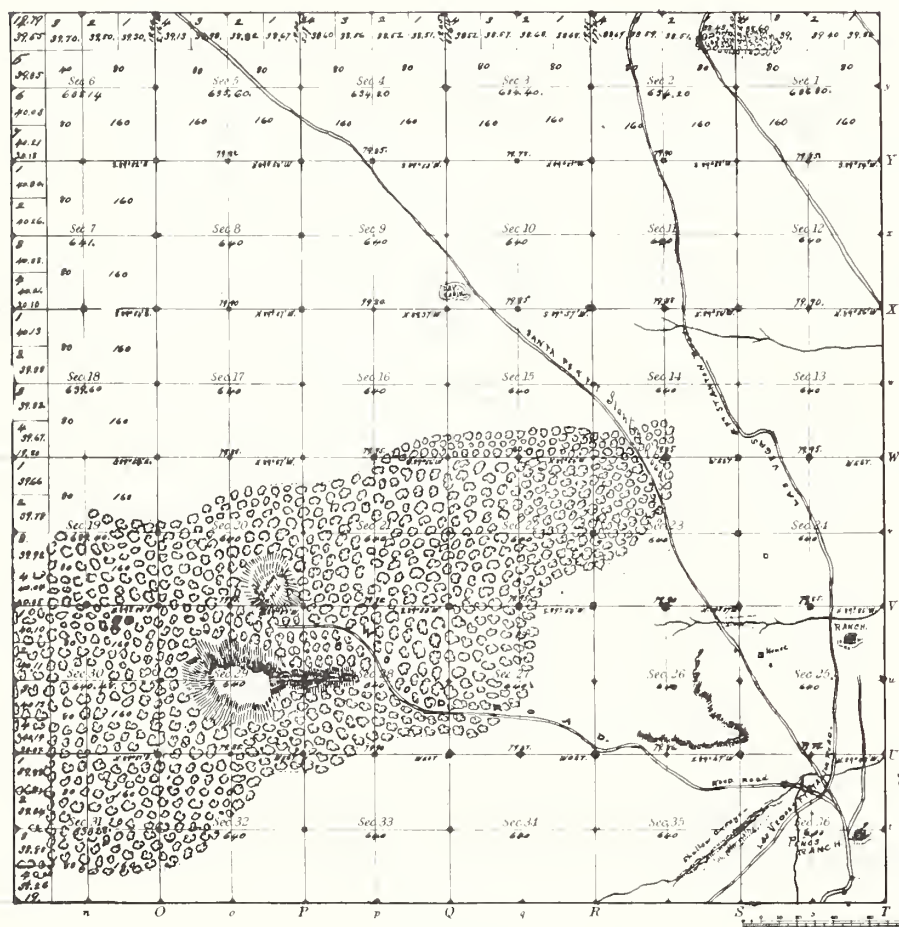
grants within the Central New Mexico Overview area were acted upon by Congress. These land grants are listed in Table 22. The Jornada del Muerto land grant was the only Central New Mexico claim rejected by Congress.

The Court of Private Land Claims was created in 1891 as a judicial board to review land grant claims. For 13 years the court presided. The Court heard cases for 13 land grants in the Central New Mexico Overview area. The findings of the court with respect to Central New Mexico land grants is summarized in Table 23. The legal history of each land grant is given in Bowden (1969), while the actual case files can be found in the State Archives and Records Center and at the University of New Mexico.

The net effect of land grant adjudication was to settle the legal status of large tracts of land throughout the state. Lands in grants that were found to be invalid claims were returned to the public domain for disposal under the various settlement acts cited above. Titles that were upheld passed to private ownership, not always the heirs who filed the claims.

Land fraud became so blatant and so widespread that a special investigation was undertaken by Democratic President Cleveland's administration in 1885 to put a stop to what was called the "Fraudulent Acquisition of Titles to Land in New Mexico" (Secretary of the Interior 1885). The power of the Santa Fe Ring was crushed. No longer could these lawyers, judges, and politi-





| Total number of Acres 33,014.10 |                        |                  |                  |               |                  |
|---------------------------------|------------------------|------------------|------------------|---------------|------------------|
| Surveyors Designated            | By Whom Surveyed       | Date of Commence | Amount of Survey | When Surveyed | By Whom Declared |
| Township Survey                 | Peters & S. M. Leland  | JULY 5th 1880    | 36 Sec. 36       | JULY 1880     | 18 East          |
| Subdivisions                    | Peters & S. M. Leland  | JULY 5th 1880    | 36 Sec. 36       | Oct 22nd 1880 | 18 East          |
| Survey of Land                  | By the American People | Survey of 1879   | 36 Sec. 36       | July 1879     | 18 East          |

The above copy of Township 3 North of Range 12 East of the Principal Meridian in New Mexico is strictly conformable to the field notes of the survey thereof on file in this office which have been examined and approved

Surveyor General's Office  
Santa Fe, N.M., August 1, 1880

Wm. M. Atkinson  
Surveyor General

Surveyor General's Office  
Santa Fe, New Mexico.  
December 16, 1880

I hereby certify that as settler on the Public Land in this Township Alexander Peter Julian, Rebecca and Andrew Lucero did under Section 2401 of the United States Revised Statutes at the Designated Depository of Santa Fe on June 2nd and December 11, 1880 make deposits of funds amounting to \$211.22 for the survey of this Township and the expenses incident thereto to wit: For the Field Work \$166.32 and for the Office Work \$44.90.

I further certify that of said deposits for survey \$166.32 was expended, leaving to be expended to the said depositors nothing, and of said deposit for Office Work \$44.90 was expended, leaving to be expended to the said depositors nothing.

Wm. M. Atkinson  
Surveyor General

Map 24. Plat of Township 3 North, Range 12 East.

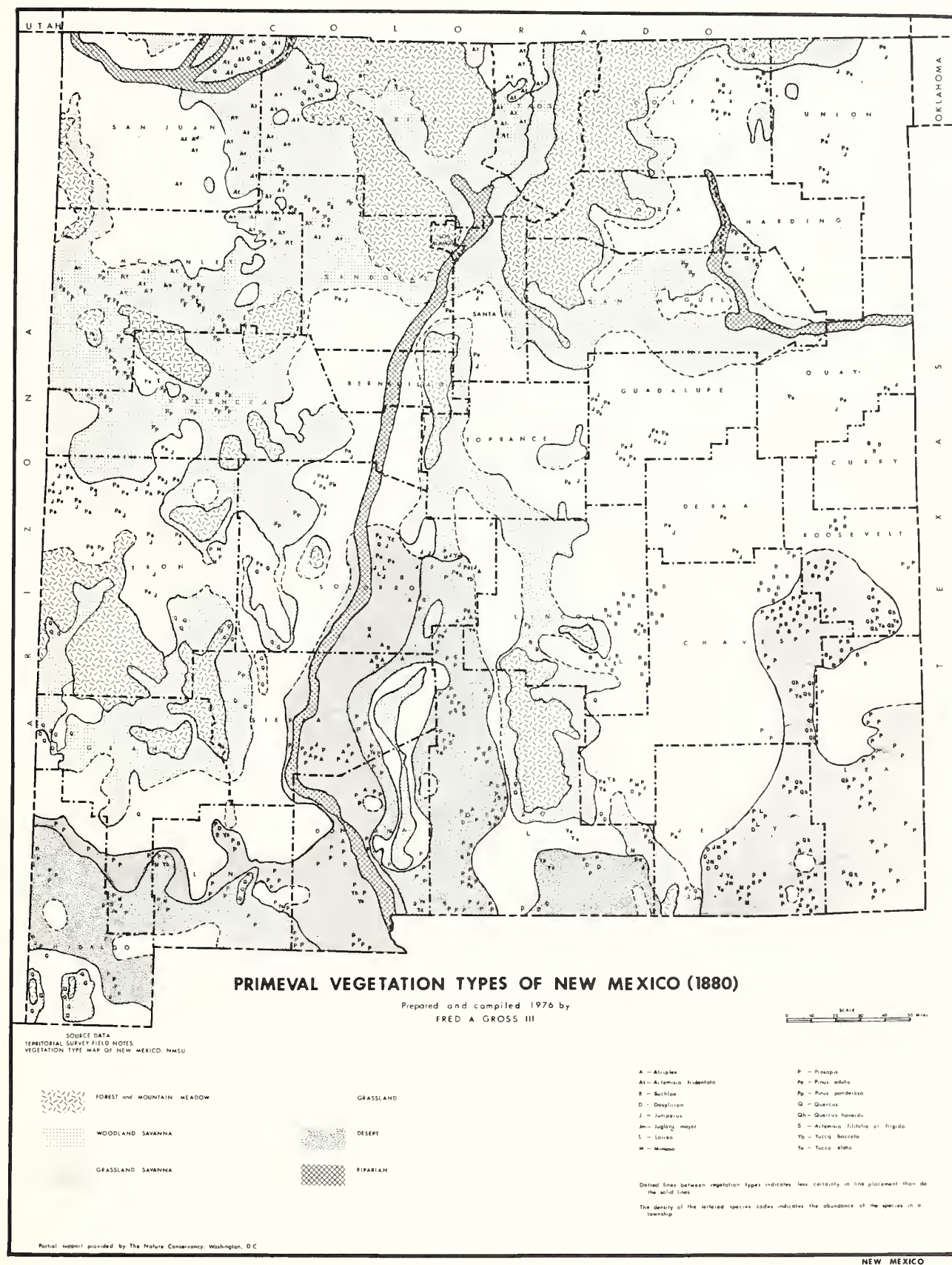
cians obtain titles to land grants. Public land laws were not changed until the Stock-raising Homestead Act 1916 was passed, but economic factors and the growing number of settlers in New Mexico combined to make it more difficult to illegally acquire large tracts of public domain.

### The Growth of Industry and the Quest for Statehood

Construction of trans-continental railways had profound effects on the regional geography of the American Southwest (Meinig 1971:38). As a result of improved supply systems and market outlets, technical and economic innovations were made in

Hispanic and Anglo social institutions and industries throughout New Mexico. The railway surveys began in the Southwest shortly after the Mexican War, but it was not until 1879 that the first transcontinental railways, the Denver and Rio Grande (D&RG) and the Atchinson, Topeka & Santa Fe (AT&SF) reached New Mexico. The D&RG did not actually enter New Mexico in 1879, but turned west at Raton Pass and headed for mines at Leadville, Colorado. A narrow gauge later connected the D&RG to the Rio Grande Valley in New Mexico. The AT&SF entered New Mexico through Raton Pass, but needed a spur line to reach Santa Fe.





Map 25. New Mexico Vegetation Types in 1880.

For central New Mexico, as for New Mexico as a whole, the AT&SF was the more important of the two railways. By 1880 the AT&SF reached San Marcial where a new townsite was constructed around railroad maintenance facilities and a switching yard (Myrick 1970:20; Williams and McAllister 1979:42). To shorten the route across the continent, the AT&SF in 1908 constructed a southerly route called the Belen Cutoff (Myrick 1970:35-37). This route cut across the Texas Panhandle, entered Clovis, New Mexico, then passed across the eastern plains through Vaughn, on to the emerging agricultural center in the Estancia Valley, then joined the main trunk of the Santa Fe at Belen. Feeder lines were built from the AT&SF to reach mines, agricultural lands, and stock raising districts throughout the state.

through the Estancia Valley and on to Willard, a depot on the Belen Cutoff (Myrick 1970:51-57). The New Mexico Central was a speculative proposition, built to encourage settlement and agricultural production in the Estancia Valley. A number of small agricultural settlements developed along the railroad (Map 26). The New Mexico Central was extended to Torrance, a depot on the Southern Pacific Railroad, and eventually linked Estancia Valley produce to markets in El Paso. A feeder line, the Santa Fe Central, lead from Estancia to coal fields at Hagan and a smelter at San Pedro. Most of the feeder lines were abandoned by 1930 when the mines and agricultural ventures were no longer profitable, but 28 miles of the New Mexico Central between Willard, Estancia and Calvert is still operable (Myrick 1970:57).

The New Mexico Central Railroad was constructed in 1903 from the AT&SF depot of Lamy, south

In order to promote the growth of New Mexico, and to ensure the economic stability needed to attain

Table 22

Central New Mexico Land Grants \*

| Grant                   | Date of Petition  | Date of Action    | Acreage      |
|-------------------------|-------------------|-------------------|--------------|
| Confirmed by Congress   |                   |                   |              |
| Pedro Armendaris No. 33 | September 6, 1859 | June 21, 1860     | 352,504.51   |
| Pedro Armendaris No. 34 | June, 1857        | June 21, 1860     | 95,030.67    |
| Bosque del Apache       | July 7, 1859      | June 21, 1860     | 60,117.39    |
| Town of Casa Colorado   | 1856              | December 22, 1858 | 131,779.87   |
| Town of Belen           | January 26, 1857  | December 22, 1858 | 196,663.75   |
| Town of Tome            | August 6, 1856    | December 22, 1858 | 121,594.53   |
| Town of Manzano         | January 9, 1856   | June 21, 1860     | 17,360.94    |
| Town of Torreon         | January 8, 1856   | June 21, 1860     | 14,146.11    |
| Town of Tajique         | February 3, 1857  | June 21, 1860     | 14,146.11    |
| Town of Chilili         | January 3, 1857   | December 22, 1858 | 41,481.00    |
| Rejected by Congress    |                   |                   |              |
| Jornada del Muerto      | May 23, 1859      | March 4, 1872     | 2,500,000.00 |

Sources: Land Title Study (1971: 222-223).

J. J. Bowden (1969: passim).

Table 23

## Disposition of Grant Claims by the Court of Private Land Claims

## Central New Mexico Land Grants

| Claim No. | Claimant                 | Name                                      | Date of Petition | Claimed Area | Confirmed Area | Rejected Area | Date of Action |
|-----------|--------------------------|-------------------------------------------|------------------|--------------|----------------|---------------|----------------|
| 13        | City of Socorro et al.   | Town of Socorro                           | 1892             | 17,371.18    | 17,371.18      |               | 01/11/1896     |
| 20        | J. Francisco Chaves      | Nerio Antonio Montoya                     | 12/19/1863       | 3,546.00     |                | 3,546.00      | 12/22/1899     |
| 37        | Martin B. Hayes          | Antonio Chaves -<br>Arroyo de San Lorenzo | 08/15/1873       | 130,138.00   |                | 130,138.00    | 12/1893        |
| 55        | Pelipe Peralta et al.    | Sevilleta                                 | 10/05/1874       | 261,187.90   | 261,187.90     |               | 12/04/1893     |
| 58        | Eloisa L. Bergere et al. | Bartolome Baca                            | 01/09/1893       | 500,000.00   |                | 500,000.00    | 01/31/1898     |
| 63        | Frank Huning             | Diego de Padilla or<br>El Tajo            | 05/31/1872       | 24,800.00    |                | 24,800.00     | 09/1894        |
| 64        | J. Franco Chavez         | San Clemente                              | 01/21/1893       | 95,000.00    | 37,099.29      |               | 09/04/1896     |
| 127       | Eutimio Montoya          | Town of Socorro                           | 02/27/1893       | 843,259.00   |                | 843,259.00    | 08/29/1899     |
| 152       | Joel P. Whitney et al.   | Estancia                                  | 07/12/1855       | 415,036.00   |                | 415,036.00    | 04/15/1901     |
| 158       | Pelicitia Crespin        | San Acasio                                | 03/02/1893       | 18,000.00    |                | 18,000.00     | 02/1895        |
| 165       | Eduardo Otero et al.     | Guadalupe Mine                            | 10/02/1892       | 16,000.00    |                | 16,000.00     | 09/04/1899     |
| 273       | Pueblo of Isleta         | Lo de Padilla                             | 01/27/1896       | 51,940.82    | 51,940.82      |               | 11/03/1896     |

Source:

Land Title Study (1971:228,234).

J. J. Bowden (1969:passim).

statehood, the New Mexico Bureau of Immigration was established in 1880. The Bureau stimulated immigration by disseminating vital statistics about the natural resources of the counties (Lange 1976:195). The propaganda worked well, for by 1910, two years before statehood, many new towns were established in Torrance and Socorro Counties (Table 24). Torrance County, particularly the Estancia Valley, exhibited the most remarkable growth during the final years of the Territory.

An unpublished report on the Estancia Valley by the Bureau of Agricultural Economics (Heringa), written in 1906, outlines the rapid growth of settlement in the valley. Between 1905 and 1906 over 500 homesteads were filed in the vicinity of Estancia, the first of many homestead communities in the valley. About 65% of the settlers came from Iowa, Kansas and Oklahoma. Homesteaders came with the dream of developing small dry-land farms or irrigated farms on their 160 acre tracts. The Bureau of Immigration, and railway publications, provided settlers with descriptions of dry farming techniques, most of which failed in all but extraordinarily wet years. By reading between the lines of the immigration brochures it is apparent that water, even for domestic use, was only available by digging wells. The 1906 Bureau of Agricultural Economics report states that water was available at 15 feet and 35 feet below the surface, but the heaviest flow was found at 80 to 120 foot depths.

Nevertheless, the population of the valley grew rapidly and commercial bean and grain farming ventures were established. By 1910, there were 2,069 farms in Torrance County and a total of 369,744 acres under cultivation, about 17% of the total area in the county. The average size of farm holdings was listed as 178.7 acres, with 35.8 acres in cultivation (U.S. Department of Commerce and Labor, Bureau of Census 1913:614). Socorro County at this time had 1,122 farms, 626,670 acres in cultivation, with average farm holdings of 558.5 acres, and 20.8 acres in cultivation (U.S. Department of Commerce and Labor, Bureau of Census 1913:614). In Socorro County 75 to 90% of all farms were irrigated, while in Torrance County less than 5% of the farms were irrigated. In spite of the smaller number and size of cultivated tracts, Socorro County farms had higher agricultural yields than Torrance County farms.

In 1911, Ellsworth Huntington visited the

Table 24

Central New Mexico Population  
1900 - 1910

Plains Villages

|             | 1900 | 1910  |
|-------------|------|-------|
| Tajique     | 318  | 783   |
| Torreón     | 472  | 755   |
| Manzano     | 649  | 607   |
| Cienega     | 182  | 247   |
| Punta       | 100  | 632   |
| Willard     |      | 1,113 |
| Estancia    |      | 1,317 |
| Moriarity   |      | 609   |
| Palina      |      | 454   |
| Duran       |      | 564   |
| Pinos Wells |      | 732   |
| Encino      |      | 376   |
| Abo         |      | 309   |
| Lucia       |      | 191   |
| Mountainair |      | 859   |
| McIntosh    |      | 571   |
| San Pedro   | 276  | 85    |
| Estay       |      | 67    |

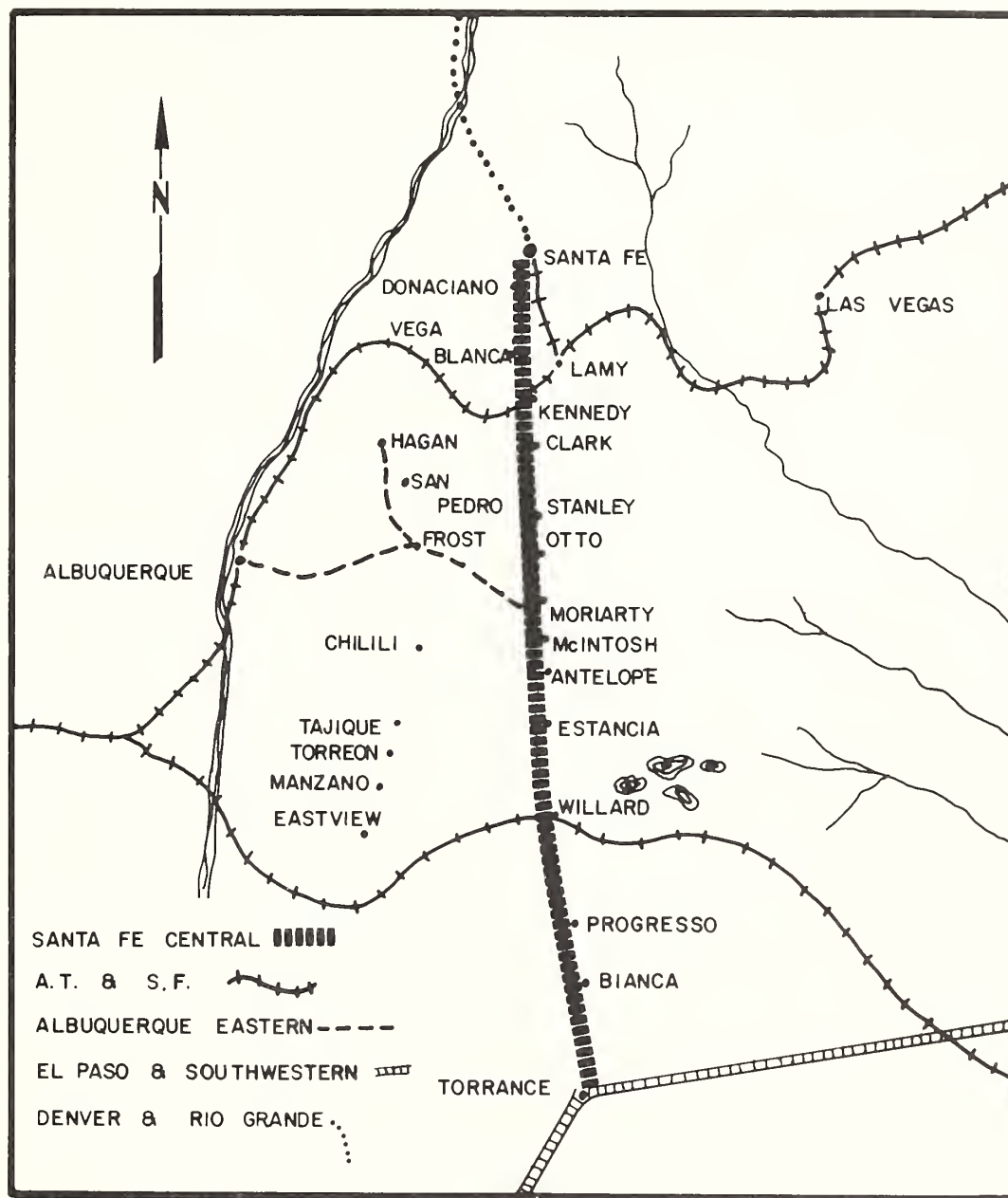
Rio Grande Villages

|                 |       |       |
|-----------------|-------|-------|
| Socorro         | 1,512 | 1,560 |
| Lemitar         | 428   | 458   |
| Polvadera       | 417   | 309   |
| Sabinal         | 317   | 344   |
| La Joya         | 342   | 345   |
| San Antonio     | 642   | 434   |
| Contadero       | 142   | 147   |
| Paraje          | 282   | 103   |
| New San Marcial | 599   | 695   |
| Old San Marcial | 419   | 500   |
| Valverde        | 300   | 255   |
| Luis Lopez      | 299   | 231   |
| San Antonita    |       | 255   |
| San Acacia      | 460   | 225   |
| Bosquecito      | 128   | 99    |
| Escondida       | 297   | 250   |
| Casa Colorado   | 219   | 312   |
| Carthage        |       | 448   |
| Elmendorf       |       | 12    |

\* Sources

1900 Compendium of the Twelfth Census:  
Aggregate Population by Minor Civil Subdivisions  
1910 U.S. Department of Commerce and Labor,  
Bureau of Census (1913:576-577).





Map 26. The New Mexico Central Railroad.

Estancia Valley to collect information about the Salinas Pueblos for his 1914 study of climate and cultural succession. His diary entry for April 1 notes that 50-75% of the homesteaders who came to the valley between 1905 and 1909 had been driven out in 1910 by repeated crop failures caused by drought, and the high cost of digging deep wells.

The grasslands east of the Manzano Mountains had been claimed in Spanish and Mexican period land grants because of their importance as pasture. These lands continued to be important to the

stock raising industry that flourished in New Mexico immediately following the Civil War. Neither Torrance County nor eastern Socorro County, however, would ever be as important to the stock raising industry as southeastern or southwestern New Mexico. The Chisum Trail, one of the principal stock driveways leading across New Mexico to California in the 1870s and 1880s, traversed the Central New Mexico Overview Area. A number of short-lived ranching communities developed on the plains to serve the stock industry. Williams and McAllister (1979) list

Table 25

## Abandoned Ranching Communities of Torrance County

| Community    | Occupation | Location              |
|--------------|------------|-----------------------|
| Eastview     | 1890-1919  | 10 mi. NE Mountainair |
| Pinos Wells  | 1884-1919  | 29 mi. SW Vaughn      |
| Gran Quivira | 1904-1968  | 19 mi. SE Mountainair |
| Progreso     | 1894-1930  | 14 mi. SE Willard     |
| Pedernal     | 1917-1955  | 21 mi. ENE Willard    |

several abandoned ranching communities in Torrance County (Table 25).

The propaganda that worked to bring dry land farmers to New Mexico also brought gold and silver seekers and miners of any remotely profitable mineral or low-grade ore. Neither Socorro nor Torrance counties had mining deposits that would sustain the economy for any length of time, but Socorro did witness a mining boom between about 1870 and 1893 (Christiansen 1974:68-69; Ashcroft 1981). Silver, discovered in the Socorro Peak Mining District, was responsible for the modest boom. Two mines, the Torrance and the Merrit, produced about \$750,000 income in the short time the mines were operated (Christiansen 1974:68). Much more prosperous mining ventures were opened at Kelley and Magdalena where lead ores were mined. Gustav Billing, a German Immigrant and owner of the Kelley mine, opened a smelter at Socorro in 1881 to refine the ore from Kelley and other mines in the area. It was successful enough to encourage the AT&SF to build a spur line from the Magdalena Mining District to the smelter.

The presence of smelters at Socorro and the success of the Magdalena Mining District and other mines in the San Mateo Mountains, particularly the gold strikes at Rosedale, brought about a certain amount of prospecting throughout Socorro County in the 1870s and 1880s (Northrop 1959: passim; File and Northrop 1966:41-45). File and Northrop (1966) list twenty-six mining districts in Socorro and Torrance counties, only seven of which are within the Central New Mexico overview area (Table 26 and Map 27).

By 1893, with the demonetization of silver, the smelting operation at Socorro was no longer profitable, and the mining districts could not be

sustained. The Hansonburg Mining District, containing the Carthage Coal Field, was the exception.

The Carthage Coal Field, located about 10 miles southeast of San Antonio, supplied the Billings Smelter at Socorro with a readily available supply of inexpensive coke (Christiansen 1974:69). This does not appear to have been the first use of Carthage coal, however. Historical literature contains many references to American troops mining coal to supply forts on the Middle and Southern Rio Grande. Each reference mentions a different date for what is known as the Government Mine in the Carthage Coal Field.

The earliest date for mining at Carthage was probably the 1850s when Fort Conrad and Fort Craig were established. In 1882 the AT&SF added a spur line from San Antonio to Carthage to haul the coke, but stopped the route in 1894 or 1895 when parts of the mine closed for a short time (Myrick 1970:139; Gardner 1910:452-460). The mine was reopened for large-scale commercial production in the early 1900s, and a new railroad was built along the old Santa Fe route. The New Mexico Midland Railroad started in 1906 and operated until 1931, about six years after the Carthage field ceased operations (Myrick 1970:142). The New Mexico Midland continued to haul coal from the Tokay mine, about two miles south of the Carthage field. Tokay, named for a variety of grape and sweet wine, was established in 1915 and operated until about 1950 (Anon 1968). When the New Mexico Midland disbanded, coal from Tokay was trucked to San Antonio.

The most important economic mineral in Torrance County is found in the Scholle Mining District. The salt deposits that were so vital to Spanish Colonial industry continued to be important for more recent residents of New Mexico.

Table 26

## Mining Districts\*

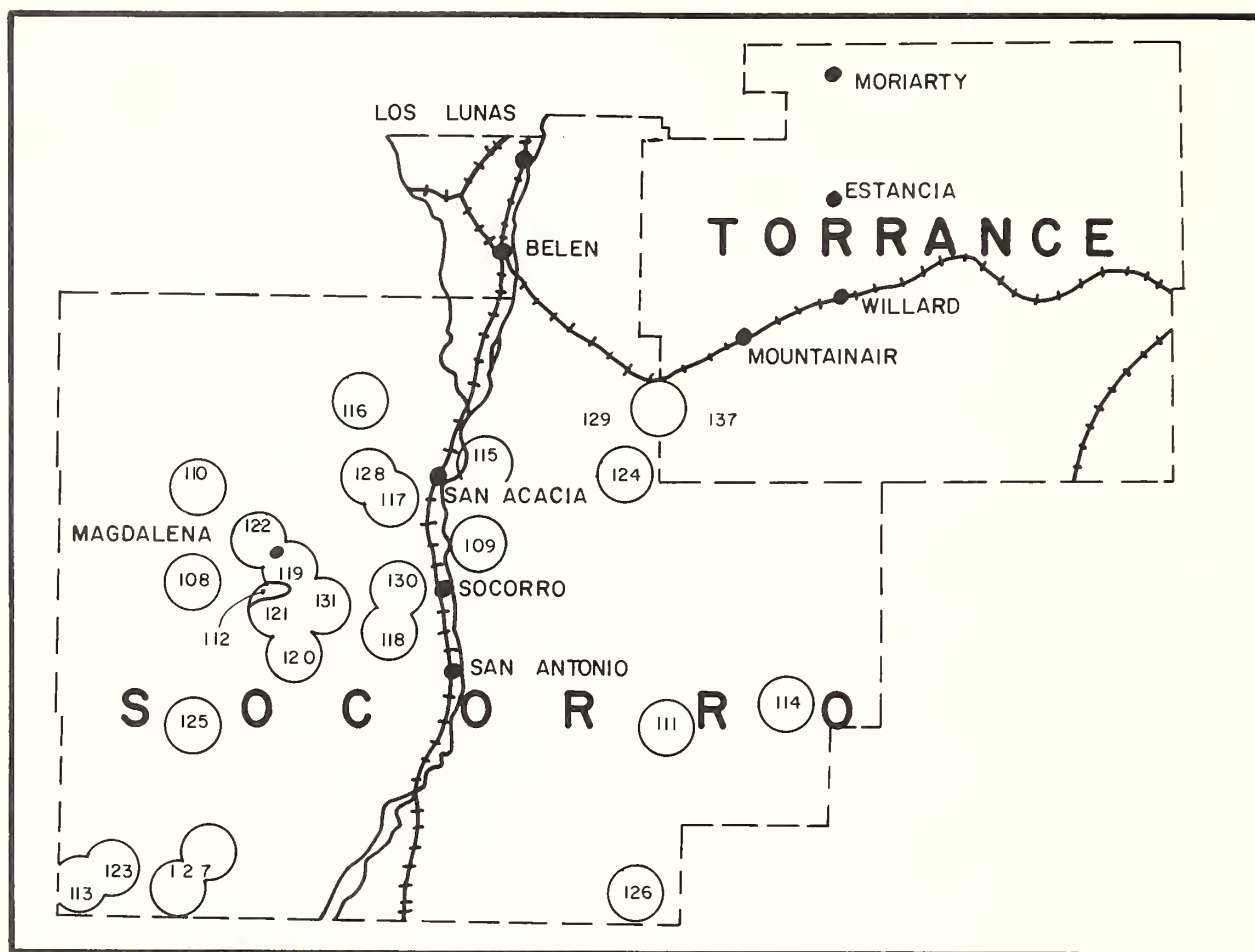
| District                            | Minerals                                              |
|-------------------------------------|-------------------------------------------------------|
| Socorro County                      |                                                       |
| 108. Cat Mountain                   | Gold                                                  |
| 109. Chupadera                      | Copper, lead                                          |
| 110. Council Rock                   | Lead, silver                                          |
| 111. Hansonburg (Carthage)          | Lead, copper                                          |
| 112. Hop Canyon                     | Gold                                                  |
| 113. Iron Mountain                  | Iron, tungsten, beryllium                             |
| 114. Jones Camp                     | Iron                                                  |
| 115. Joyita Hills (Canyoncito)      | Lead                                                  |
| 116. Ladron Mountains               | Lead, zinc, manganese, uranium.                       |
| 117. Lemitar Mountains              | Zinc, lead, uranium                                   |
| 118. Luis Lopez                     | Manganese                                             |
| 119. Magdalena                      | Zinc, lead, copper, gold, silver, manganese, vanadium |
| 120. Magdalena Mountains Manganese  | Manganese, copper, zinc, gold, silver                 |
| 121. Mill Canyon                    | Copper, gold                                          |
| 122. North Magdalena                | Copper                                                |
| 123. Ojo Caliente                   | Copper, lead                                          |
| 124. Rayo                           | Copper                                                |
| 125. Rosedale                       | Gold                                                  |
| 126. Mockingbird Gap                | Copper, lead, zinc                                    |
| 127. San Jose (Nogal, San Mateo)    | Gold, silver                                          |
| 128. San Lorenzo (San Acacia)       | Copper, uranium                                       |
| 129. Scholle                        | Copper, silver, uranium                               |
| 130. Socorro Peak                   | Silver, lead                                          |
| 131. Water Canyon (Silver Mountain) | Copper, lead, zinc, gold, silver, manganese           |
| Torrance County                     |                                                       |
| 137. Scholle                        | Copper, uranium                                       |

\* Source: File and Northrup (1966).

Northrup (1959:276) estimates that the salt deposits cover an area of about 13,500 acres; the largest deposit is known as Laguna del Perro. Johnson (1902b:80-87), who visited the saline deposits near Willard in 1900, stated that these supplied ranches within a one hundred mile radius. The purer salt was trucked to more distant parts of the state for sale. Johnson (1902b:85) described the process of mining the salt at a saline just west of Lucy, New Mexico. The purer salt was found at the bottom of the lakes, so wagons were driven into the shallow salines and loaded with the damp salt. Two types of salt seem to have been mined: coarse, dark salt for livestock, and purer, whiter salt for

table use. Although not a vital commercial or industrial deposit, the Torrance County salt mines were a vital resource to the ranching industry of New Mexico.

Expansion of population, growth of industrial production, and participation in national markets followed the development of railways in New Mexico. A secure economic base, and participation in the national economy, were among the important issues in the fight for statehood. Factionalism within the territory and eastern prejudice against New Mexico's Hispanic heritage, however, combined to prevent statehood until 1912. Lamar (1970:171-201) provides an excellent



Map 27. Central New Mexico Mining Districts.

analysis and summary of the issues and resolutions that ultimately led to statehood for New Mexico. Hispanic tradition as well as American law and culture had to be sensitively balanced in the process. The state constitution, drafted in 1910 by 100 delegates, managed to protect tradition and to embrace the more conservative elements of national policy. On January 6, 1912 New Mexico became the 47th state.

#### STATEHOOD: 1912 - PRESENT

##### Another Attempt at Homesteading

Two distinct phases of homestead settlement occurred in New Mexico. Figure 7 graphs the number of homestead patents issued in New Mexico between 1837 and 1960. Although the graph does not show those claims filed and then later relinquished or cancelled, general trends in homestead processing can be demonstrated. Figure 7 shows that the first phase of homestead

activity began just after the turn of the century and subsided in the years immediately preceding statehood. This phase corresponded with the completion of transcontinental railway construction and the concerted efforts of the territorial government to promote the population needed to secure statehood. The effects of homesteading were more apparent in Torrance County and on the plains of eastern Socorro County than along the Rio Grande, where lands had been claimed under earlier settlement expansions.

The second phase of homesteading, although not as widespread as the first, began about 1910, accelerated around 1920, then rapidly declined about 1924. This phase can be attributed to changes made in the Homestead Act in 1916. The Stock-raising Homestead Act of 1916 allowed settlers to file claim to 640 acres of the Public Domain, if these lands were primarily valuable for grazing and raising forage crops, had no commercial timber values, and did not contain



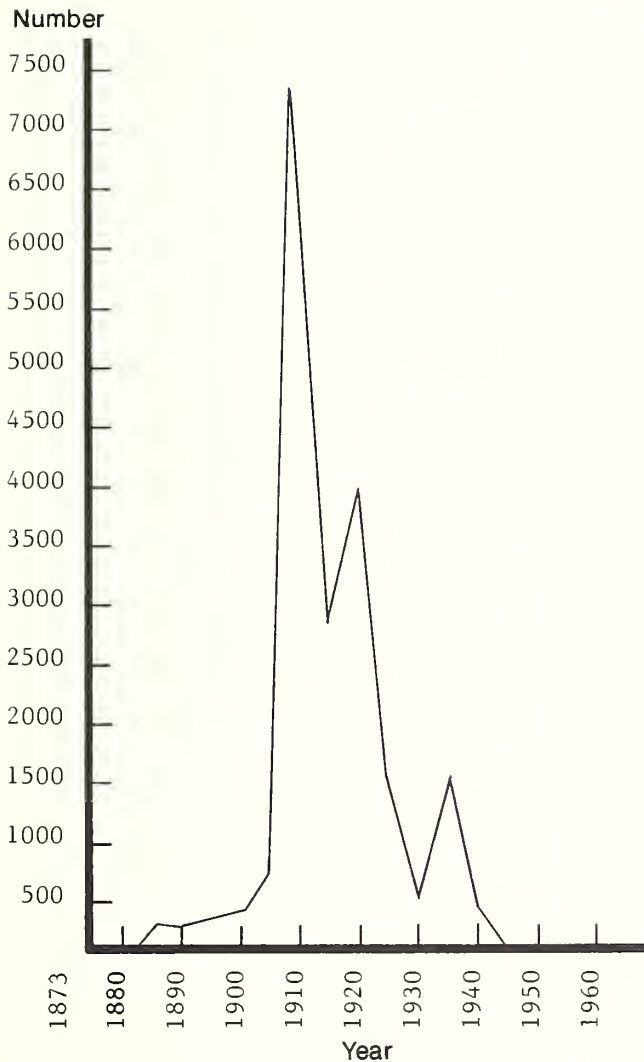


Figure 7. New Mexico Homestead Patents (after Levine et al. 1980).

irrigation waters (General Land Office 1925:1). The expanded acreage and special benefits available under the Stock-raising Homestead Act encouraged veterans returning from World War I to file for homesteads. Table 27 summarizes the number of patents and total acreage patented in New Mexico between 1837 and 1944. Six General Land Offices opened in New Mexico between 1900 and 1919 to serve the flood of immigrants. The Central New Mexico Overview area was served by the Santa Fe, Roswell and Las Cruces offices (Map 28).

This phase of homesteading was associated with a more intensive land-use strategy than had been practiced by the earlier homesteaders. As an example, Map 29 shows the 1922 settlement pattern

of Township 1 South, Range 9 East, near Claunch, in eastern Socorro County. Fence lines dividing individual holdings, large cultivated dry farming tracts, and roads proliferated during this period. The Public Domain was shrinking, and with it declined the large sheep and cattle ranches that had used the plains since the Colonial Period.

The Estancia Valley prospered during this homestead effort. The second group of Estancia Valley homesteaders, coming primarily from Texas, Oklahoma, and Kansas, practiced a more specialized economy than the first wave of immigrants. Because of the aridity of the area and the short growing season, few crops could be grown. Pinto beans were the most successful crop for these conditions, and by 1930 beans were the principal market crop. A 1936 sociological study of the Estancia Valley reported 77% of the 74,713 acres of available crop land in Torrance County was put in bean production (Soil Conservation Service 1936:1). Yields per acre varied considerably, depending upon soil and moisture conditions, but ranged between 30 pounds per acre in marginal areas to 800 pounds per acre under ideal conditions. Over a ten year period (1930-1940) the average yield per acre was slightly less than 300 pounds (Culbert 1941:59). At the price of \$1.15 to \$4.75 per 100 pounds, bean farming was hardly a profitable undertaking. Crop mortgages, tenant farming, and mechanized equipment were used to enlarge the size of farms and to increase family income. Some families supplemented their income with the sale of dairy products and beef cattle (Soil Conservation Service 1936:5). A report on dry farming in Roosevelt and Curry counties of far eastern New Mexico specified the conditions under which dry farming practices could sustain a farm family:

If a farmer has an assured supply of stock feed and a market for livestock and livestock products at his command and he and his family are satisfied to live mainly off the products of the farm, he can continue to farm in such an area indefinitely (Wooton 1927:8).

A widespread drought ravaged New Mexico livestock and farming industries in the 1930s. Range lands that had been overgrazed for decades were subject to erosion, creating dust bowl conditions. Commercial bean farming in the Estancia Valley was subject to the same liabilities that troubled other single cash crop farming regions; namely drought, disease,

market conditions, and rising production costs. The drought brought about a major change in farming strategy for those who could afford to develop irrigation wells (Bourlier et al. 1970:146). Those who could not afford to develop irrigation facilities were forced to leave the area. John Sinclair (1943, 1977), in his historical and fictional works, records the second phase of homesteading in the Estancia Valley.

At a time when wind erosion was creating dust bowl conditions in the Torrance County dry farming area, floods began to alter the channel of the Rio Grande below Socorro. Hugh G. Calkins (1937), Regional Conservator for the Soil Conservation Service, traced the history of late summer and early autumn flooding that began about 1911, and in 1929 destroyed crops in villages from San Acacia to San Marcial, then virtually destroyed

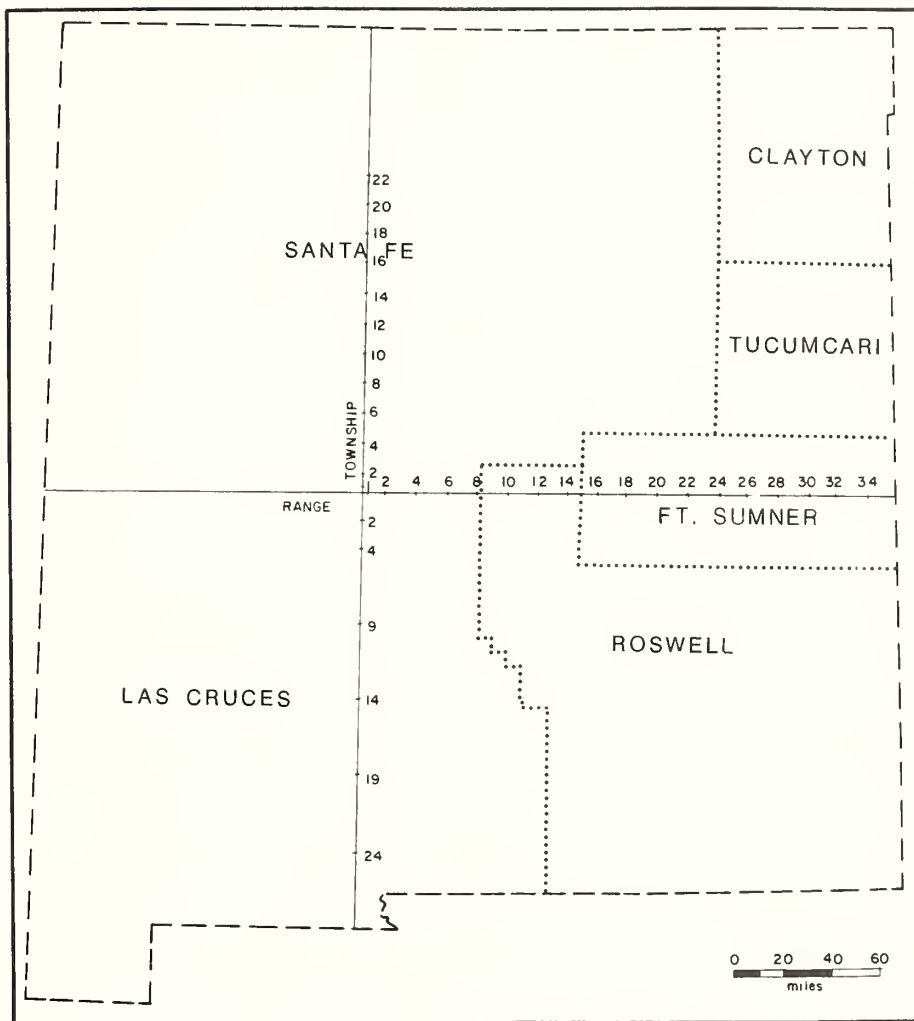
Table 27

New Mexico Homestead Patents

| Year | Number of<br>Patents | Acreage | Year | Number of<br>Patents | Acreage   |
|------|----------------------|---------|------|----------------------|-----------|
| 1873 | 4                    | 640     | 1909 | 9,107                | 1,368,393 |
| 1874 | 1                    | 640     | 1910 | 7,198                | 1,237,489 |
| 1875 | 8                    | 1,284   | 1911 | 3,501                | 627,298   |
| 1876 | 37                   | 5,541   | 1912 | 2,541                | 394,928   |
| 1877 | 7                    | 1,040   | 1913 | 3,617                | 565,321   |
| 1878 | 8                    | 1,159   | 1914 | 3,107                | 495,793   |
| 1879 | 9                    | 1,259   | 1915 | 2,913                | 465,527   |
| 1880 | 15                   | 2,000   | 1916 | 3,124                | 589,888   |
| 1881 | 225                  | 38,602  | 1917 | 2,746                | 562,912   |
| 1882 | 266                  | 37,166  | 1918 | 3,007                | 620,616   |
| 1883 | 551                  | 81,487  | 1919 | 2,939                | 633,853   |
| 1884 | 277                  | 40,215  | 1920 | 4,119                | 935,876   |
| 1885 | 192                  | 27,754  | 1921 | 3,803                | 917,654   |
| 1886 | 177                  | 23,143  | 1922 | 3,653                | 938,333   |
| 1887 | 103                  | 15,120  | 1923 | 2,303                | 708,175   |
| 1888 | 141                  | 20,758  | 1924 | 2,224                | 707,029   |
| 1889 | 142                  | 19,876  | 1925 | 1,798                | 567,488   |
| 1890 | 147                  | 21,573  | 1926 | 1,617                | 528,436   |
| 1891 | 241                  | 36,494  | 1927 | 1,307                | 447,739   |
| 1892 | 225                  | 33,430  | 1928 | 820                  | 279,996   |
| 1893 | 347                  | 53,215  | 1929 | 945                  | 337,144   |
| 1894 | 248                  | 37,210  | 1930 | 579                  | 204,416   |
| 1895 | 200                  | 30,671  | 1931 | 612                  | 223,444   |
| 1896 | 209                  | 31,474  | 1932 | 488                  | 194,762   |
| 1897 | 278                  | 41,686  | 1933 | 621                  | 243,087   |
| 1898 | 371                  | 56,274  | 1934 | 491                  | 243,087   |
| 1899 | 374                  | 52,048  | 1935 | 1,137                | 484,200   |
| 1900 | 322                  | 45,927  | 1936 | 1,183                | 510,615   |
| 1901 | 459                  | 58,789  | 1937 | 1,295                | 570,063   |
| 1902 | 388                  | 55,580  | 1938 | 822                  | 357,758   |
| 1903 | 465                  | 67,633  | 1839 | 563                  | 248,100   |
| 1904 | 529                  | 79,850  | 1940 | 307                  | 133,504   |
| 1905 | 829                  | 128,034 | 1941 | 129                  | 57,277    |
| 1906 | 1,018                | 157,108 | 1942 | 72                   | 27,054    |
| 1907 | 1,343                | 206,306 | 1943 | 34                   | 14,640    |
| 1908 | 3,035                | 495,271 | 1944 | 11                   | 2,974     |

Source:

Levine et al. (1980).



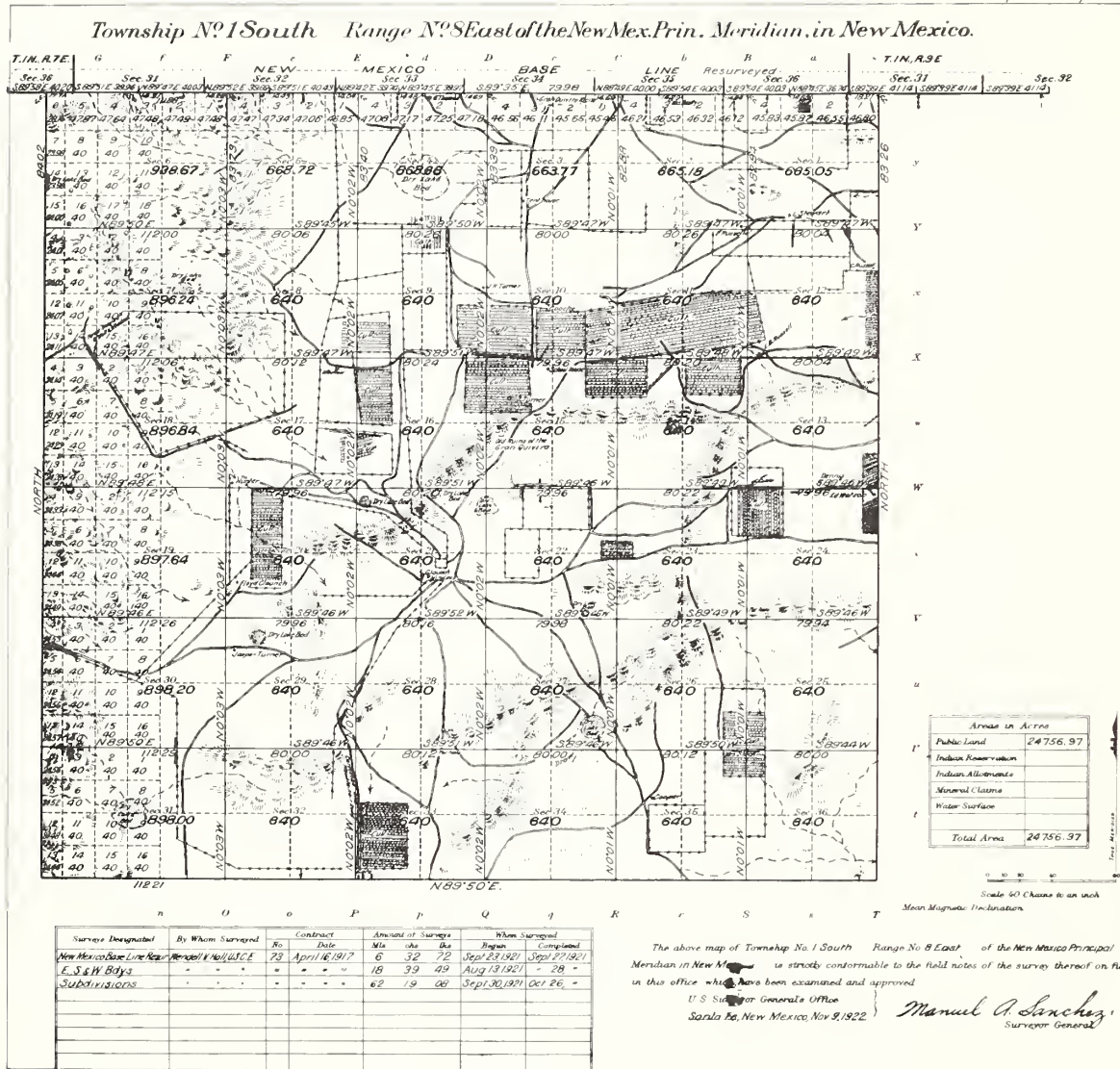
Map 28. Areas Served by New Mexico General Land Offices.

the towns of New San Marcial, Old San Marcial, Valverde, and La Mesa (Calkins 1937:9-11). Floods occurred again in 1937 (Calkins 1937) and in 1941 (Harper et al. 1943:35). The village of Contadero was condemned during construction of Elephant Butte Dam in 1916, and flooded in 1924 (Calkins 1937:14).

After the 1929 flood, the AT&SF Railroad moved all its facilities from San Marcial to Belen. The former area entered into an economic decline from which it has never recovered. The combined population of the villages of Contadero, New San Marcial, Old San Marcial, Valverde, and La Mesa dropped from 1,797 in 1910 to 703 after the 1929 flood, and by 1940 there were only about 150 people in the area (Calkins 1937:13; 16th U.S. Census; Aggregate Population by Minor Civil Subdivisions). Harper et al. (1943) discuss the social, economic and political processes that

culminated in the 1930s and early 1940s to cause considerable community disintegration throughout the Middle Rio Grande. The factors, most visible as intensive land-use practices, included the conflict between Anglo and Hispanic economic strategies, the growing commercial use of range lands and agricultural lands, the loss of individual and community land grants, and the use of railroad land grants (Harper et al. 1943:56-65).

The 1930s were a time of great mobility for the male population of New Mexico, particularly among Hispanics. High paying jobs were available in the mine and sugar beet fields of Colorado, and on commercial ranches in Montana, Wyoming and Utah. Other men took what work they could find with the Works Progress Administration or the Civilian Conservation Corps. This out-migration of laborers continued through World War II, and



Map 29. Settlement Pattern in T. 1 S., R. 8 E.

quickened with the construction of the interstate road system (Leonard and Loomis 1941; Hurt 1941; Leonard 1970; Weigle 1975:35-38; Meining 1977-81). Once again networks connecting supply outposts and market centers were restructured, and the population resettled accordingly. Albuquerque, Las Cruces, Clovis, Roswell, and Farmington, each in turn became boom towns. The Central New Mexico Overview Area receded to a settlement pattern similar to that which occurred during the Mexican Period. The middle Rio Grande Valley retained its importance as an agricultural area, and as a series of supply posts along the major north-south highway. Torrance County range land assumed dominance over farming, as a result of the increasing need for and cost of irrigation

development. A new land tenure pattern developed with the creation of National Forests and the passage of the Taylor Grazing Act.

#### The Growth of Federal Land Management

The 1890s saw the rise of Populism in the United States, and with it a concern for the conservation of America's natural resources. It was during this period that the policies and procedures of the General Land Office were reviewed, and the Public Land Reform Act of 1891 was passed (Gates 1968:340). One of the most important provisions of the Act authorized the President to establish by proclamation Forest Reserves from public land. For six years there was consid-



erable opposition to the implication that the Act permitted the Federal government to hold the land and timber resources in perpetuity. The National Forest Reserve Act of 1897 was passed to allow the harvesting of timber within forest reserves (Steen 1976:26-46). In 1905 National Forest management was established in the Department of Agriculture. The mandate for the management of the Nation's timber resources was modified in 1960 with passage of the Multiple Use and Sustained Yield Act. The Act was a supplement to the 1897 Act, and provided for the comprehensive, planned management of timber, livestock, watershed, wildlife, and recreation resources (Steen 1976:297-307). In 1976, after litigation involving the review of Forest Service timber harvesting procedures, the Forest Management Act was passed to clarify and expand the range of timber products that could be harvested from National Forests.

Within Torrance County the Cibola National Forest manages two parcels of land totaling 204,657 acres. One parcel is in the Manzano Mountains, bordering and encompassing some of the early Mexican Period land grants; the other parcel is in the Gallinas Mountains, north and east of the Jornada del Muerto. The Cibola was created in 1931, consolidating United States Forest Service holdings in the Manzano Mountains, the Mount Taylor Area, and in the vicinity of Zuni, New Mexico. The Cibola manages timber and grassland resources and leases to local operators those resources available for harvest.

The Bureau of Land Management holds considerable land in eastern Socorro County. These lands came under BLM management in a variety of ways. Some parcels were returned to the Public Domain after being rejected by land claims hearings, other areas were and continue to be used, but have never been formally claimed for transfer from the Public Domain to the private sector. The Bureau of Land Management was created in 1946, combining the functions of the General Land Office and the Grazing Service. The General Land Office was created in 1812 to oversee the disposal of Federal lands under various settlement and land-use acts passed as the Nation grew. When the Department of the Interior was formed in 1849 the General Land Office became part of the Department.

Competition among stock raisers for rapidly dwindling range lands resulted in passage of the Taylor Grazing Act on June 28, 1934. The Act

provided that land be classified according to its highest and best use, and that all other uses be eliminated (Penny and Clawson 1968:463). Homesteading, land exchanges, conservation of wildlife, and management of watershed were also protected by the Taylor Grazing Act. For the stockman, the Act established grazing districts and a system of leasing for lands not within grazing districts (Penny Clawson 1968:463).

From 1946 to 1964 the Bureau functioned primarily to administer grazing regulations and the duties of the General Land Office. In 1964 the Classification and Multiple Use Act was passed, requiring that lands be designated for retention or disposal under the principles of multiple use. The charge for multiple use management was strengthened in 1976 with passage of the Federal Land Management Policy Act.

The multiple-use orientations of the Bureau of Land Management and the Forest Service have done much to align these two agencies, although they are located in different departments of the Federal government. Multiple-use concepts are used by both agencies for balanced conservation of environmental and cultural resources.

A major portion of the land base within the Central New Mexico Overview Area is retained in Federal ownership. Listed below is a tally of the land holdings of each agency within the two counties as of 1982. In Socorro County the largest tracts of forest lands are located in western Socorro County, outside of the overview area. The major portion of BLM land, however, is within the Central New Mexico Overview Area, and adjacent to the Rio Grande.

#### Socorro County

|                                |                 |
|--------------------------------|-----------------|
| U.S. Forest Service            | 1,904,228 acres |
| Bureau of Land Management      | 630,652 acres   |
| U.S. Fish and Wildlife Service | 279,000 acres   |
| National Park Service          | 370 acres       |
| Bureau of Reclamation          | 4,055 acres     |
| Corps of Engineers             | 39,170 acres    |

#### Torrance County

|                           |               |
|---------------------------|---------------|
| U.S. Forest Service       | 154,017 acres |
| Bureau of Land Management | 44,373 acres  |
| National Park Service     | 276 acres     |

The U.S. Fish and Wildlife Service is among the largest of the Federal land management agencies

in Socorro County. The Bosque del Apache and Sevilleta Wildlife Refuges are located within former land grants. The refuges are primarily nature conservancy area, but the Bosque del Apache is open for limited hunting and harvesting of grains planted by local farmers on a sharecrop basis.

The Bureau of Reclamation controls lands adjacent to the Rio Grande, which are held in conjunction with the Middle Rio Grande Conservancy District. The Conservancy was created in 1923 to provide Middle Rio Grande agricultural lands with an efficient irrigation system and to ensure drainage and flood protection for the villages (Harper et al. 1943). The Bureau of Reclamation has assisted the Conservancy to discharge its duties. In many ways the Bureau and Conservancy have taken over the roles that were traditionally assigned to the men of the Hispanic communities, and to which some status was assigned. Many of the irrigation facilities constructed as part of Elephant Butte Dam and Reservoir are for use in irrigating lush commercial farms in the Mesilla

Valley. Elephant Butte Reservoir inundated a portion of the Pedro Armendaris Land Grants when it was constructed.

The Corps of Engineers holds and manages lands that are part of the White Sands Missile Range. The lands are located in the Jornada del Muerto and the Oscura Mountains, and contain the Trinity Site. In 1967, the Trinity Site was designated as a National Historic Landmark, to preserve the site of the assembly and detonation of the world's first nuclear device. The detonation site was chosen because of its remote location, reliable weather conditions, and flat topography (Kunetka 1978:146-147). The considerable amount of land claimed for the entire missile range displaced many ranching families. Ironically, the assembly and control center of the test site was established in the former headquarters of the McDonald Ranch. A fictional account (Abbey 1978) tells the impact of condemnation proceedings on the community as a whole, but focuses particularly on one man who refused to be moved from this ranch.

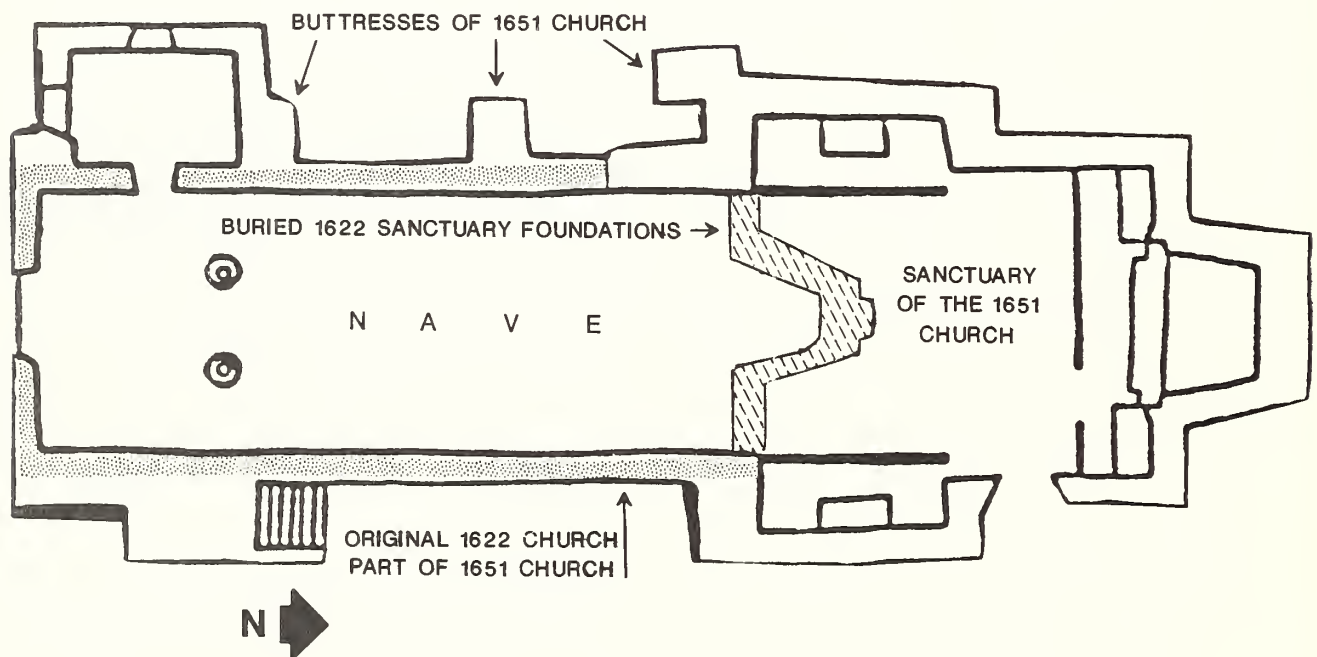


Figure 8. National Park Service sketch map of the church (San Gregorio de Abo Mission) at Salinas National Monument. Excavations by James Ivey and Judy Miles in 1987 uncovered foundations suggestive of a process of enlargement which incorporated certain parts of the original 1622 structure. The 1651 buttresses were added to support the new, higher raised roof while the 1622 sanctuary walls were removed.

# FUTURE RESEARCH AND MANAGEMENT

## RESEARCH AND MANAGEMENT DIRECTIONS

### THE ARCHEOLOGICAL RECORD

Faced with the task of discussing research direction in the archeology of central New Mexico, one is put in the position of the "kid in a candy store." There is so much to be learned about this area, that selecting a place to begin is perhaps the most difficult choice of all. One can readily point out that any contribution to knowledge of this region is welcome. At the same time, a "butterfly collecting" approach to archeological work in the area is not desirable. Based on the known prehistory of the region, coupled with theoretical perspectives presented elsewhere (Tainter and Gillio 1980), it is possible to outline what seem to be some of the major research questions in the area. The suitability of individual sites for addressing these questions might be taken into account when making management decisions. Since research goals regularly change, however, and since no single person can possibly outline the total range of research questions pertaining to a region, what follows must not be taken as the sole criterion by which to reach management decisions.

1. The question of early occupation of the Estancia Basin remains unanswered. Both the Sandia Complex and Lyons' (1969) Estancia Complex are intriguing candidates for pre-Clovis manifestations. This is a topic of national, indeed hemispheric, concern. John Cole (1980:13), however, has made the point that when early dates are asserted or confirmed, one is inevitably led to ask "So what?" Early dates, by themselves, are devoid of anthropological significance. What early-date proponents have failed to do is attach behavioral or cultural-evolutionary significance to their data. This, coupled with the fact that it is almost impossible to implement a research program to test "earliness," suggests that new areas of research might be profitable. One such area might be the functional analysis of Sandia points. If these prove not to have been stylistic markers of short temporal duration, then the Sandia controversy may be somewhat defused. Similarly, for the Estancia Complex, we need to know what parts of a settlement system the two documented sites represent.

2. Persistent questions remain about the nature of PaleoIndian subsistence. Although these early populations have long been thought to have practiced a focal economy, concentrating on megafauna, that view no longer seems plausible. Irwin-Williams (n.d.) has proposed that decreases in the megafaunal population of western New Mexico led to periodic PaleoIndian withdrawal from the area, and to an occupational hiatus at the PaleoIndian/Archaic interface. If, however, PaleoIndian subsistence relied primarily on the smaller fauna and flora, which is the common pattern among hunters and gatherers, then such population withdrawals during periods of megafaunal depletion would have been unnecessary. Furthermore, if during periods of megafaunal depletion, diagnostic PaleoIndian projectile points were not being used (or were not being used as frequently in the plains-like areas where we tend to look for them), then the archeological record might give the incorrect impression of abandonment. The delineation of PaleoIndian subsistence-settlement systems is clearly a crucial research goal. Linda Cordell (1979:21) has suggested the use of obsidian hydration dating, and identification of diagnostic reduction processes, for locating PaleoIndian remains.

3. The geomorphological dating of early sites in the Estancia Basin needs to be evaluated by independent means. This will no doubt be as formidable a task as trying to date the Sandia Complex. If the early Desert Culture (Archaic) and PaleoIndian remains were indeed temporally equivalent, what do these remains signify? I have argued that they would not reflect distinct socio-ethnic groups, but rather different aspects of a single subsistence-settlement system. If the geomorphological dating is correct, then the notion of a PaleoIndian/Archaic occupational hiatus becomes less convincing.

4. What is the correct chronological placement of the point forms referred to as J or Jay? Were they exclusively Archaic, or were similar points made in the PaleoIndian era as well? Is there any significance to this last possibility, or would this merely reflect independent developments?

5. What is the significance, for Archaic subsist-



ence in the Estancia Basin, of the possible persistence of mammoth in this area until at least ca. 2000 B.C.? If Desert Culture remains can be dated to perhaps 10,000 B.P., and if mammoth persisted so late into the Holocene, then there may have been broad similarities between PaleoIndian and Archaic subsistence in this area.

6. The area displays projectile points resembling northern (Oshara) and southern (Cochise) forms. Does this, as Lang (1977) suggests, reflect movements of population? Are the assumptions required by Lang's interpretation reasonable? What changes in social and economic interaction could create such an appearance in the archeological record?

7. Were late Archaic/early Basketmaker populations in the areas of San Lorenzo Arroyo and the northern Fra Cristobal Mountains largely sedentary? What implications would this have for population growth in the region? What, in general, were the demographic trends through the prehistory of the overview area?

8. The Arroyo Cuervo-West Mesa region to the northwest of the overview area shows evidence of population stress and accommodating adjustments in the areas of subsistence, settlement, and social organization during the late Archaic/early Basketmaker periods. Were similar processes occurring in and near the western part of the overview area? Did such population pressures force expansion of riverine populations (Tiwa and Piro) into upland areas to the east? The distribution of Tiwa and Piro speakers east of the Manzanos, at contact, suggests such a process. If this movement took place at all, did it occur at some other time?

9. What were the subsistence and demographic patterns of the early Puebloan era, leading up to the complex aggregated communities of the late Puebloan period? What factors induced the early Puebloan settlement pattern changes that Marshall and Walt (1984) have discerned in the riverine area?

10. Crucial questions revolve around the biological affiliation and nutritional status of early Puebloan populations. Can the healthy status of late period populations be extended backward in time? Or were earlier populations subject to greater stresses, stresses that were perhaps relieved by the organizational changes of the late period? What were the biological

relationships between early Puebloan Salinas populations and their neighbors, especially those of the northern Tularosa Basin?

11. What is the behavioral significance of mixed Anasazi-Mogollon ceramic assemblages on Puebloan sites? What fluctuations in economic interaction and social affiliation produced these patterns?

12. What is the explanation for the apparently defensive situation of early Pueblo IV sites, in both the riverine and upland area? Is this related to the phenomenon of population aggregation? What other factors, such as the depopulation of the Jornada region, might have been involved in the aggregation phenomenon?

13. What factors underlay the expansion of the social hierarchy at Gran Quivira after 1550? What role did the new status level play in the organization of the society?

14. What are the reasons why Anasazi ceramic and architectural features were not readily imitated in the Gran Quivira area? What factors were inducing Rio Grande populations to change their ceramic and architectural patterns at the same time that Salinas populations were not induced to change?

15. What factors underlay the formation and dissolution of ceramic trading patterns? How did some localities come to a position of primacy in ceramic manufacturing and export? What were the economic effects on local populations when these industries collapsed?

16. What did happen to the population of the northern Tularosa Basin ca. 1350-1400 A.D.? The skeletal remains from Gran Quivira do not support the interpretation that these populations moved into the Salinas Province. What would skeletal populations from other late period sites reveal?

17. What was the total impact of Spanish domination on native social organization, religion, subsistence, labor scheduling, seasonal mobility, trade, technology, and external relations? How did these impacts combine to bring about the collapse of the Salinas Province?

#### HISTORIC SETTLEMENT IN CENTRAL NEW MEXICO: THE ARCHEOLOGICAL IMPLICATIONS

##### The Place of Archeology in the Study of Historic Cultures



The archeological study of historically documented cultures has recently become an important focal point for American archeologists and historians. The relationship between archeology and history has been the subject of debate for many years. As archeologists have turned away from studies of the unique and the particular to attempt more scientific observation and interpretation of the material remains of human activities, they have sought independent corroboration for their generalizations. Anthropological archeologists seek to use the techniques of archeological investigation to test assumptions and anthropological theories concerning the relationship of man to his natural, built, and cultural environments. Historical sources have provided archeologists with independent controls and a wide range of cultural models with which to compare their field observations. At the same time, historians have expanded their inquiries from great persons and great movements to include studies of vernacular architecture, common people, and the regional and local development of American culture. Local history, in its many forms, is no longer the province of amateur historians, genealogists, and neighborhood pack rats. Historians have also come to recognize the contribution that archeology can make to history. Material culture has provided historians with a greater understanding of the processes and networks that have characterized American communities at different times and in different places.

Two questions must be answered in outlining the future relationship between archeological and historical disciplines in cultural resources management: (1) How can archeology add to the understanding of cultures that have been documented by historical records; and (2) how can the archeological study of historically documented cultures add to the developing methods and techniques of historical cultural resources management?

Historical archeology, in its simplest definition, is the archeological study of the material remains of places occupied and objects used in the historic period. The beginning of the historic period varies throughout the United States, but is generally reckoned from the time of contact between Native Americans and Europeans. At contact, presumably, documentary histories become available. That archeology is considered a useful technique for the study of historically documented cultures is based on a

number of implicit as well as explicit assumptions concerning recorded history.

Three and occasionally four data sources may be available to studies of historic cultures. They are: documentary materials, oral history sources, archeological remains and, in some instances, contemporary analogues. Perfect congruence among available data sources is seldom obtained. Each source is a different memory of the past - a selection of facts and artifacts from which the past must be reconstructed. Processes of destruction act upon each source, resulting in the preservation of fragments of the whole. But taken together the material remains, documents, and oral traditions tell more than any single source could.

Cultural anthropologists recognize vast differences among prescribed, proscribed, and actual behavior. Records often contain ample documentation of required and forbidden cultural practices, but they do not always reflect how people responded to laws, rules, and cultural forms. Some cultural events and activities never become part of a documentary record. This may be because such a record is culturally prohibited, or because the actions are performed so routinely that they become an unconscious act and are never recorded in detail. Records are not an unbiased view of the past. Official documents record the behavior of the dominant culture. The norm of the record keepers may vary considerably from the variations practiced by subgroups of the culture. On the other hand, travelogues, diaries, and other journals may be records of practices that appeared to the diarists to be curious. These records may tell more about the recorder than the people or practices being described. The variety of documentary materials that may be available to the study of historic cultures might be classified into five main groups. They are: public and organizational records, personal papers and manuscripts, newspapers, photographic collections and maps. It is the task of the diligent researcher to verify sources and to establish the selection processes that may have resulted in the preservation of some written records and the destruction of others. Court house fires, indolent clerks, overprotective spouses, and overzealous housekeepers have been known to have shaped bodies of historical data.

Spurred by the success of such programs as the Foxfire oral history projects, students of

anthropology and history have been quick to turn to oral history to understand the past. Local informants are a valuable source, but oral testimony has to be evaluated with the same rigor as other source materials. Folklore, legend, and social and political hagiography gradually become established facts in most communities. The passages of time and circumstances have an effect on the veracity of the oral historical record. The cultivation of informants is time-consuming. Anthropologists know from a long tradition of interviewing that the first or most willing informants can often be the least knowledgeable. These adventurers may be peripheral members of their own communities, anxious to form friendships, to gossip, and have little to lose by answering the endless questions of a curious outsider.

In the formation of an archeological deposit materials are incorporated into the record by loss, intentional discard, and abandonment. Natural processes act on the physical remains of a culture, causing the deterioration of organic materials, and thus bringing about the selective preservation of more durable fabrics. The content and context of an archeological deposit can be further altered by post-occupational disturbance. Surface collecting, or as it might be called in the case of historic archeological sites, "heirloom hunting," can remove or rearrange important parts of the material culture data base. New elements, such as more recent trash, can cause problems in the interpretation of archeological information.

Information may be lost, too, in the process of recording and analyzing archeological sites. The boundaries of sites, and even the definition of a site, are usually determined by the maximum distribution of surface remains. In most cases this is quite different from the way in which boundaries were determined by the people who built and occupied the sites. When archival and ethnographic sources are available more meaningful site boundaries, land-use patterns, and cultural practices can be drawn.

Studies combining archeological site recording, archival research, and ethnographic interviewing - interdisciplinary studies - are important to satisfy the evaluation processes that are part of the legislative compliance process.

#### The Interdisciplinary Approach To Historic Cultural Resources Management

The interdisciplinary approach should be integrated into the earliest planning stage of Federal projects that have the potential to impact historic cultural properties. Table 29 presents an idealized scheme for incorporating the three data sources into planning and development projects. For the purpose of assembling the chart, data collection, analysis, and evaluation procedures were biased toward the collection of land-use information. The three vertical blocks represent research activities that are part of any investigation, namely, data compilation, data analysis, and data evaluation. The levels of study shown on the extreme left side of the chart are project phases commonly used in Federal land-use planning and development.

The research strategy outlined in Table 28 proceeds from a general regional model of settlement and land-use, generated in the overview and assessment stage, to increasingly specific site evaluations performed in the data recovery phases. Each level of study has different goals. The goal of an overview and assessment is to define the range of cultural resources previously recorded in the study area, to assemble regional archeological records, ethnographic, and historical information, and to evaluate the best strategy for study of cultural resources in the project area. From this information the broad patterns of settlement, land-use and land-tenure can be drawn. Preliminary research designs and data collection strategies can then be drafted for use in the reconnaissance phase of study.

Reconnaissance should combine a statistically derived, sample ground survey with a more intensive ethnographic and literature search. The goal of reconnaissance is to collect data that can be used to make reliable prediction of the density, distribution, and variability of resources within the project area. The data collected should serve as a basis for refining the research design and data recording format to be used in the inventory survey stage. By the time that the inventory survey stage begins, the projects' historians and ethnographers should have completed the research necessary to formulate models of land-use and settlement in the study area. On-site inspections with informants should begin during the survey data compilation stage.

The testing phase is similar to the

Table 28

## Planning Guide for the Use of Ethnohistorical Sources in Cultural Resources Management

| Level of Study   |                                                                                                |                                                                                                                       |                                                                                                                  |                                                                                                  |                                                                                                                     |
|------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Research Phase:  | Regional Overview and Assessments                                                              | Reconnaissance                                                                                                        | Inventory Survey                                                                                                 | Testing                                                                                          | Data Recovery                                                                                                       |
| Data Compilation | Literature search: secondary sources, state archeological records, photo archives.             | Sample survey of project area.                                                                                        | Intensive archeological survey of project area.                                                                  | Limited excavation and controlled surface collection of representative sample of site inventory. | Excavation and/or controlled collection of sites.                                                                   |
|                  | Public records search: patent dates, deeds, historical maps, census information.               | Preliminary ethnographic research of project area and adjacent communities.                                           | Directed questioning of informants. Questionnaire, file history, folk history, history of area.                  |                                                                                                  | On-site and/or site-specific interviews with key informants.                                                        |
|                  | Community contacts: Local historical societies, amateur archeologists.                         | Contact local historians, amateur archeologists, local informants for information on project area and adjacent areas. | Begin on-site visits with key informants.                                                                        | Optional on-site visits with informants.                                                         | Site-specific historical records search: photographs, maps, descriptions.                                           |
|                  |                                                                                                |                                                                                                                       | Literature search: primary sources, i.e., military reports, correspondence, mission records, land grant records. |                                                                                                  | Public records, census information, wills, etc.                                                                     |
| Data Analysis    | Settlement and land-use patterns: based on secondary sources, public records, historical maps. | Develop settlement and land-use models of project area. Based on regional overview.                                   | Define functional site types.                                                                                    | Establish temporal and cultural range of site inventory.                                         | Archeological dating: functional analysis of associated materials, features, and structures.                        |
|                  | Preliminary research design: region and area specific.                                         | Refine research design.                                                                                               | Construct project specific settlement and land-use models.                                                       | Reexamine definition of functional site types.                                                   | Ethnographic and documentary dates, functional analysis of associated materials, features, and structures.          |
|                  | Preliminary archeological survey form                                                          | Refine survey form.                                                                                                   |                                                                                                                  |                                                                                                  |                                                                                                                     |
|                  | Preliminary questionnaire for informants.                                                      | Refine questionnaire.                                                                                                 | Detailed historical overview of project area.                                                                    |                                                                                                  |                                                                                                                     |
| Data Evaluation  |                                                                                                |                                                                                                                       | Compare archeological and ethnohistorical settlement and land-use patterns.                                      | Reexamine archeological and ethnohistorical information.                                         | Compare archeological excavation materials and ethnohistorical sources to determine inconsistencies.                |
|                  | Determine data gaps in archeological and historical records.                                   | Determine inconsistencies between archeological and documentary evidence.                                             | Synthesis of archeological and ethnohistorical data.                                                             | Determine and evaluate inconsistencies between archeological and ethnohistorical data.           | Integrate ethnohistorical and archeological survey and excavation data into project-specific and regional overview. |
|                  | Design survey sampling strategy.                                                               | Predict site types and distributions.                                                                                 | Determine potential research topics and define goals for ethnohistorical and archeological research.             | Determine significance of cultural resources inventory.                                          | Determine and evaluate gaps in ethnohistorical and archeological record.                                            |
|                  |                                                                                                | Determine zones of direct and indirect project effect.                                                                | Recommendations for testing program.                                                                             | Recommendations for mitigation of project effects; research design; sampling strategy.           | Recommendations for regional research strategy.                                                                     |
|                  | On to Reconnaissance                                                                           | On to Inventory Survey                                                                                                | On to Testing                                                                                                    | On to Data Recovery                                                                              | On to Research Funding Sources                                                                                      |



reconnaissance phase in that it is a time for formulating and refining the direction of the study. Testing is often an important step in defining the significance of the resources and in determining the most appropriate means of recording the significance of the resources. The final stage in many cultural resources management projects is data recovery. The goals of this stage are to fully recover the significant information that would otherwise be lost. Site specific research strategies must be developed at this stage.

The debate over the significance of particular historic cultural resources is not likely to end as long as significance is the main issue in determining whether or not Federal funds can be expended to protect or preserve these resources. Historians and archeologists have access to different research materials, and disagree between and among themselves over the level of documentation needed to protect the significant values of cultural resources. Taken together the three sources are complementary. An accurate overview cannot be written by selectively drawing from among many available sources, but only by systematically comparing and contrasting the information obtained from each source. No approach can ensure that "the" significant value or values of a cultural resource will be protected, but the interdisciplinary approach certainly assures that a systematic study has been attempted to determine the scientific, associative and heritage values of the resources.

#### HISTORICAL ARCHEOLOGY IN CENTRAL NEW MEXICO: SUMMARY OF MAJOR CULTURAL RESOURCES ISSUES

Frances Levine and John P. Wilson

The research involved in the preparation of the bibliography and the summary of the culture history confirmed an initial impression: that the periods of Central New Mexico history for which the most historical documentation exists are the late 16th and 17th centuries to 1680, and the 20th century. Much of the literature pertaining to the Colonial Period has been translated from the Spanish and collated in topical volumes. Copies of many of the Spanish documents are available at the New Mexico Archives and Records Center in Santa Fe, Zimmerman Library at the University of New Mexico and the National Park Service, Salinas National Monument in Mountainair, New Mexico. The 20th century references consist of primary documents

mainly found in newspapers, and in legal, government, and personal records. There are few secondary or summary sources available for the recent historic period. Project-specific overviews and special studies of such topics as homesteading, ranching, railroads, conservation, mining, and Federal land management will have to budget time to summarize the available primary references and to prepare the background documents needed to assess significance and appropriate preservation or mitigation strategies.

The historical documentation for the Mexican and Territorial periods is extensive, but not comprehensive. Travelogues, diaries, and military reconnaissance reports are available for those areas that lay along the Santa Fe and Chihuahua Trails, or areas that were reached by geographical and military surveyors. These reports give a generalized view of Mexican village life just prior to the American conquest, but leave many questions concerning social organization, economics, and subsistence largely unanswered. For the Territorial Period survey maps of Central New Mexico are available. Although they cannot be accepted uncritically, they give some of the most complete information concerning land-use and settlement patterns for areas scheduled for disposal under the Homestead and Settlement Acts. Legal histories of land grants can be found in the files of the Surveyor General and the Court of Private Land Claims. Detailed culture histories, and settlement and land-use studies, of land grants or lands formerly within land grants require archeological and primary historical research to augment the schematic and often biased information presented in the land grant case files. For the Mexican, Territorial, and Statehood periods newspapers can provide important local perspective on the development of towns, regions and particular industries. Stratton (1969), and Grove et al. (1975), provide comprehensive guides to New Mexico historical newspaper collections.

Detailed below are some of the major historic cultural resources issues that appear to be suited to an interdisciplinary (archeological and historical) research approach. This discussion is not intended to be a comprehensive list of the significant research problems in the area, but to highlight some of the more obvious problems that were identified in working with the historical documentation and archeological site files.

The nature of the Spanish entrada was such that



little archeological evidence has been found for this initial contact phase. Rather, diaries and logs kept by the explorers provide the record of contact between the Pueblos and conquerors. Although biased toward assessing the potential for mineral wealth and commercial enterprise, the documents remain the primary sources for reconstructing the contact period landscape of the Southwest. The identity of groups named in the chronicles, the location of settlements, and the routes of the explorers have provided the general picture of settlement and land-use patterns, trade networks, and political affiliations of aboriginal populations.

The literature and archeological site inventory of the Spanish Colonial Period is extensive for the Central New Mexico Overview Area. The Colonial Period marks the beginning of substantial cultural changes among the first phase of Hispanic settlements in the Central New Mexico Overview Area, as in New Mexico as a whole. The precontact cultural sequence and cultural modifications that contact brought to the Piro are not well documented. A recent survey of the Rio Abajo by Marshall and Walt (1984) identified some 26 sites that date to the Protohistoric and Colonial Periods, and are identified as Ancestral Piro, Piro, and Hispanic. The survey concentrated on the riverine and first terrace locations along the Rio Grande, from its confluence with the Rio Puerco to the area south of San Marcial near the Fra Cristobal Mountains. The data collected by this survey will form the basis for future comparison of Pueblo and Hispanic interaction in the Rio Abajo during the Colonial Period, with Pueblo and Hispanic interaction in the Salinas Area, as well as in the Rio Arriba (particularly in the vicinity of Cochiti Reservoir where the greatest number of Hispanic archeological sites on the river have been found).

At the time of contact the Piro villages appear to have been smaller than the villages visited by the Hispanic explorers in the Rio Arriba and Salinas areas. On the basis of the limited Rio Abajo Survey, Marshall (1982) believes that at contact, the Piro population was beginning to aggregate into a lesser number of settlements. This trend continued throughout the Colonial Period, under the direction and influence of Hispanic priests and encomenderos.

Marshall and Walt found much more limited evidence for Colonial Hispanic occupation in the

Rio Abajo. The survey recorded Colonial components at four sites (LA 286, 287, 774, and 2004). The evidence consists of late glaze and Mexican-made ceramics. LA 286 is the only Colonial component that Marshall et al. recorded that is not within the room block of an ancestral Piro or Piro site, although the low cobble and adobe structure is within an extensive complex of Piro sites near San Acacia, New Mexico. This is similar to the 17th and 18th century Colonial sites excavated at Cochiti Reservoir (C. T. Snow 1979). There is considerable variation in the types and architectural form of structures that have been attributed to Spanish Colonial occupants of the Cochiti area. For the most part, however, the material culture of the Colonial Hispanic sites and the Colonial Period pueblo sites is very similar (C. T. Snow 1979:217-226). Rio Arriba Hispanic sites' high percentage of Pueblo-made pottery has led David Snow (1973) to conclude that the Colonial Hispanic residents of New Mexico relied on the Pueblo industries to supply household utensils. Petrographic analysis is a critical element for future studies of historic pottery. Survey beyond the riverine environment, and limited excavation of the Rio Abajo and Colonial sites, are needed to clarify the relationship of Pueblo industries and Hispanic economic and subsistence strategies.

There are many questions about the Hispanic and Pueblo Indian settlement, subsistence, economic, and cultural practices during the Colonial Period. Some of these questions are listed below.

**1. The salt lakes of the Estancia Valley and their exploitation.** These are not unique in New Mexico, but the Estancia lakes and the single lake south of Zuni are the most widely known. They have surely been visited since prehistoric times and proposals for their use continue in the 20th century (Anonymous 1949). Yet while the formation of the Estancia lakes is well understood by geologists, there has been virtually no attention directed to them by historians or by archeologists. The Estancia Valley, known to the Spanish as the province of Las Salinas, was the scene of vociferous contentions between Church and State during the 1660s, in part over the use of Indians to collect and transport salt (Anonymous 1914; Hackett 1973).

Investigation of this general problem should seek

answers to several questions. One question is which lake or lakes were exploited? Johnson (1902a) implied that a single lake was harvested, and the location of the so-called La Salina Grant (Donnell 1933) might be a partial confirmation of Johnson's claim. Another question is, how was the salt harvested? What archeological remains can be expected at the salt lakes? At present Johnson (1902b) is the sole reference on this point. A third question is, for what purpose(s) was the salt used? Domestic consumption and use by livestock are obvious replies, but may be only partial explanations. Common salt was a necessary element in the patio process, widely used in New Spain for the extraction of silver from its ores. One Anonymous (1914) reference may provide a lead that would help to determine whether salt from the Estancia Valley was being exploited primarily for use in the reduction of silver ore at Parral, in what is now southern Chihuahua. Although the Santa Barbara district there was founded in 1567, new discoveries were made nearby in the 1650s. One may ask whether these new discoveries enhanced the value of salt from far off New Mexico, by providing an expanded market for it and thereby setting the stage for conflict in the 1660s.

Finally, to round out this line of inquiry, one might also ask the reason for failure of the more recent salt-mining ventures. Were these failures for technical or economic reasons, were they failures of management, or did they involve more than a single factor?

**2. The identity of the Pueblo Indian inhabitants of the Estancia Valley and their relationship with the Piro Indians of the Rio Grande Valley.** This general problem has seen an abundance of writing and little resolution. During the 17th century the Pueblo Indians of the Rio Grande Valley from Sevilleta south to Senecu were called Piros. Whether this name was applied to a linguistic community, to a geographical entity or to some type of a supra-tribal grouping is not of particular importance because the name "Piro" was employed consistently.

Further to the east, however, consistency in the application of names is not the case. The proper referents of the names Jumano and Tompiro remain unclear. There is some question about whether the Pueblos of the Salinas area spoke a single language or more than one. Apart from Abo, it appears that there is a disjunction between the names of pueblos through ca. 1601 and the names

used during the 1620s and later, with additional complications in the late 1670s when "Las Salinas" may have been applied to Tabira (Pueblo Blanco) as well as to a portion or to all of the Estancia Valley. The absence of linguistic materials, other than place names, adds further to the problem of characterizing the Estancia area and its 17th century inhabitants.

To resolve the identity problem, answers to some basic questions are needed. For example, which of the 17th century names appear to have been applied to a linguistic group or groups; which names may have had only a geographical meaning; what ones (other than names for specific pueblos) denoted ethnic or cultural groupings; and which if any might have referred to political combinations of more than one village? The ecclesiastical practice of the name following the congregation (e.g., Isleta, Isleta del Sur) should not be forgotten, although this is probably not a problem in the Salinas area. If the basic matters of how names were used and what changes in usage occurred through time can be resolved, the next generation of questions will almost certainly be more fruitful than would otherwise be the case.

Much more can be done in this problem area than has been attempted to date. Place names have apparently not been looked at from a linguistic standpoint. Leap (1971) implied that Bartlett's (1909) Piro informants probably spoke as much Tiwa as Piro; the vocabulary and the single recorded text (Harrington 1909) should be examined with this in mind. Spanish documents contain occasional references to which Indian languages the priests could speak (New Mexico Franciscans not being notable linguists) and the fathers can usually be traced around in their assignments; these factors should enter into the equation. The sometimes scanty existing evidence, including the archeological surface collections, should be reexamined to try and determine which of the pueblos may actually have been new foundations in historical times, and therefore may have little or no bearing upon the pre-Spanish distribution of Pueblo Indian groups.

The question of what relationships obtained between the Piros of the Rio Grande Valley and the Pueblos of the Salinas area has long fascinated scholars, with almost no resolution on this matter. Part of the difficulty may be in finding a fruitful approach; e.g., how much will a distributional study of potsherds tell us, if

as it appears that Quarai and Abo may almost have been producing ceramics commercially (Warren 1981b)? Can petrographic analysis distinguish ceramic industries particular to the Rio Grande and Salinas areas? Comprehensive archeological surveys using non-destructive procedures need to be made of the relatively few, late prehistoric and historic pueblos of both the Piro and Estancia Valley area, with a goal of distinguishing the time, position, extent, and duration of each component actually represented at a site, insofar as possible from surface indications and controlled test excavations. Too much of the existing information consists of uncontrolled surface collections gathered forty years or more ago, reported on by people who perhaps never visited the location. Surveys beyond the riverine environments and away from the central village sites are needed to determine the full range of Salinas and Piro adaptations to their environments.

At the same time that controlled surveys are run, the extant archival and published records should be searched and compiled with a goal of separating fact from fiction. For example, Bishop Tamaron in 1760 (Adams 1953) referred to traces of a church at the ruins of San Pascual, a (presumably) Piro pueblo for which there are no known references from the 1598-1680 period. Was the bishop mistaken or did he know what he was talking about? Since the Adams translation was made from an abridged text published in Mexico in 1937, the most immediate step with reference to this question would be to obtain a copy of the complete, original Tamaron report.

### 3. Subsistence in the 17th century.

Subsistence-related questions appear to dominate archeological inquiries, and in pre-Revolt New Mexico subsistence does appear to have dominated the thoughts of both Spaniards and Pueblos at times, if we can believe the claims of starvation that were being made about 1600 and again around 1670. There is evidence that the Piros practiced ditch irrigation and that the Senecu mission at least had a vineyard, though otherwise our best information about Piro subsistence is from the 1581-1583 narratives (Hammond and Rey 1966).

With respect to the Salinas area, there are a number of claims by the priests about seemingly chronic shortages of food in that province. Steen (1977) recently summarized the situation and drew some conclusions. The general problem, however, is that we know next to nothing about

the subsistence practices of the pueblos on the eastern flank of the Manzanos and along Chupadera Mesa. Steen may be quite correct in saying that this was a submarginal agricultural area, yet people persisted here into the 1670s and there is even one reference to cotton being grown. We do not know what other crops were raised or in what manner.

This general problem can best be attacked through a combination of documentary research and non-destructive archeological investigations. It may be that the Pueblo Indians had developed some ingenious techniques for growing crops in an unpromising environment. For example, Orr (1935) in a popular article has an intriguing mention of "extensive fields that were cultivated in ancient times" far back up the hillsides from Quarai. Such leads should be pursued and the unexpected should be anticipated. Through excavation it should be possible to more completely determine the changes in Salinas and Pueblo diets after contact with the Spanish, and to determine the effects of the Revolt on Pueblo diet.

As a minor but perennially fascinating question, the origin of "America's oldest apple orchard" at Manzano has never been settled despite the volume of writing about it. Carleton (1855) claims that the orchard dates prior to the Pueblo Revolt. Hawley (1936) concluded that the orchard dated from A.D. 1800 or very close to this, but at this period the area should have been without settled inhabitants. The name Manzano was current by 1778, when Father Valez used it for the mountain range which still bears that name. Assuming that any of the apple trees are still extant, a horticulturalist with strong historical interests should be introduced to this problem. Archeologists and historians probably have no further contribution to make on this question.

4. There are a variety of other problems that relate to the early historical horizon in the Estancia Valley particularly, and which would be more susceptible to solution through historical and archeological research than by either alone. One is the nature of Apache relationships with the Pueblo people. Some references document hostilities and even the destruction of churches, but it would be unusual if the relations were always so. Why have so few Apache sites been identified in Central New Mexico?

There is also the question of the locations, nature, and relationships of non-Indian (Spanish)



ranchos in the Estancia Valley and along the Rio Grande Valley. These small settlements may have posed severe problems for the nearest Indian communities, given the existence of the encomienda system in 17th century New Mexico. Apart from a dwelling at Los Ojuelos, on the west side of the Manzanos, it appears that few non-Indian remains other than missions have yet been identified south of the Albuquerque area. With recognized sites as well as documents, the investigation of such questions as the relocation of the Piros of Sevilleta at the rancho of their encomendero and at Alamillo pueblo for several years, ca. 1660, would undoubtedly be more productive. Within the Rio Abajo, were Colonial Hispanic settlements more often built within the Pueblo communities, contrary to prescribed land-use practices?

Bandelier raises a particularly important point with respect to dating small, adobe structures located along the Rio Grande. His caution is as timely today as when he wrote it in 1892:

I desire to call the attention of future investigators to one point: previous to the insurrection of the Pueblos, Spanish farm-houses, haciendas, and what may be called cattle ranches, existed at various places along the Rio Grande from above Socorro to about nine miles below, where the hacienda of Luis Lopez probably indicated the most southerly Spanish dwelling in New Mexico. The houses of such establishments were like the adobe buildings on isolated ranches of this day, and the mounds formed by them through decay in course of time would be quite similar in size and appearance to those of ancient Indian small-house abodes. The investigator should also bear in mind that in many small-house ruins pottery is rare on the surface; so he is exposed to the double danger of regarding as very ancient what is in fact modern, or of disregarding as modern what really belongs to the most ancient type of aboriginal architecture in the Southwest (Bandelier 1892:246).

There is what might be called the ultimate question with respect to the Salinas pueblos, that of their abandonment. This has been written about for at least one hundred years, often in a popular manner, but the timing and the probable reasons are almost as poorly understood as ever. There is good evidence that Tajique was still occupied at the time of the Pueblo Revolt. For

the others, answers have been superficial and based upon shallow research. Only two of the six excavations of churches and chapels at Salinas area pueblos were carried out and reported in a professional manner. For the others, we do not even know whether the churches were burned. This latter point has a clear bearing upon the question of whether it was fear, hunger, or something else that prompted the eventual abandonments.

5. Our only records of activity in the Estancia Valley during the century and a half after 1680 are the references to summer patrols in the 1751 - 1754 period, and the records of Governor Marin's expedition in 1759 (Lange et al. 1975), while for the old Piro country there are travelers' narratives for the Camino Real. Were these areas unoccupied, other than by Apaches, until resettlement of the Socorro area after 1800 and at Manzano, New Mexico by 1829? Toulouse (1947) indicated that there was evidence for 18th century reoccupations at Abo and Quarai. If this can be supported by precise chronological assessments, then what were the nature of activities involved with these seemingly undocumented settlements, and are there other examples?

6. Recent mining activity in the Manzanos has been virtually nil, apart from the Scholle district, and the histories of coal and base-metal mining for eastern Socorro county suggest that pre-Territorial mineral prospecting was on a small scale, at best. Geologists, however, are currently interested in Spanish mining, and there are just enough leads to suggest that this general problem should be reexamined for the overview area. The leads include one land grant claimed on the basis of an alleged mine (Bowden 1969), arrastras in at least Priest and Hell canyons (Parker 1947, Reiche 1949), and an apocryphal reference in File and Northrop (NMSBMMR Circular 84, p. 39) to a mine or prospect in the Goodfortune District, worked by a Marguerito Lucero in 1655. Precious-metal mining was something of a consuming interest for Spanish settlers, and early evidences for prospects in mineralized areas might be more extensive than has ever been realized.

For the Mexican and early Territorial periods questions of location, extent, and type of settlements must be answered. The available historical documentation records many of the settlements visited by travelers along the Santa Fe and Chihuahua Trails, but does not clearly



define the social and economic attributes of the settlements. The following types of questions might be asked.

1. Land grant settlements were an important means of expanding the Mexican claim to lands south and east of the late Colonial settlements in the Rio Arriba. The land grant records provide very little information concerning the types of settlements built on grant lands. Controlled archeological surveys are needed to define the range of site types and the functions of settlements established on land grants and former land grants in the Central New Mexico Overview area. How do settlements located on Manzano Mountain land grants differ in settlement pattern, land-use strategies, and/or material culture from the presumably earlier land grant settlements on the Rio Grande? How do the Rio Abajo settlements differ in pattern or in function from the much earlier Rio Arriba communities?

2. Trade networks were greatly expanded during the Mexican and early Territorial periods. Prior to the Mexican War, New Mexico received goods from and shipped goods to American Territories and the northern provinces of Mexico. What industries of Central New Mexico contributed to the trade? How did the material culture of New Mexico change after trade was established with the American territories? Settlements east of the Manzano Mountains did not take part in the trade to the extent that Rio Grande communities did. How did this affect the prosperity and cultural practices of the two areas? What archeological evidence remains to supplement the historical records of trade along the Chihuahua and Santa Fe Trails? What are the archeological attributes of a paraje, a hacienda, a pueblo, and a villa built along the Chihuahua Trail?

3. Apaches and Navajos continued to raid Rio Grande and Manzano Mountain villages throughout the Mexican and earlier Territorial periods; yet, we also know from U.S. military reconnaissance reports that the Jicarilla were frequently seen trading and living among the Manzano Mountain communities. What determined the cycles of raiding and trading among Navajo and Apache groups? What archeological attributes define Apache and Navajo sites, and can use areas for different bands be differentiated on the basis of these attributes?

4. Conflicting land use and land-tenure

strategies between Hispanic and American settlers were apparent from the earliest contact between the two groups. What accommodations - legal, social, and material - were made to allow the blend of Hispanic and American cultural practices that now characterizes New Mexico? What are the archeologically and historically discernible differences in land-use practices that characterize Hispanic and American farming and ranching strategies? Can the historical and archeological study of Hispanic and American land-use strategies be used as a foundation for land management policy today? What are the determinants of cultural land-use practices?

The later Territorial and early Statehood periods were marked by intensifying land-use practices, the growth of population, and the development of industry throughout the Central New Mexico Overview area. Coupled with this was the progressive abandonment of Hispanic community patterns that had been developing from the late Colonial period. These topics are suitable for archeological and historical study.

1. The outstanding general problem is the timing and nature of early 20th century agricultural development in the Estancia Valley. Within the space of a few years old land grants were disallowed, railroads built, lands opened for settlement, and the more arable parts of the valley settled up with homesteaders. Fragments of this story have been published, as with the building of the railroads, but a critical history of 20th century settlement has not been attempted. The resources to support such a study exist and are not difficult to locate.

Within the general problem more specific questions can be framed. The General Land Office had a central role in this settlement. What was the nature of its actions in opening the lands to settlers and under what Acts were claims actually made? To what extent were the homesteads proven up, relinquished or otherwise disposed of? In what manner did the homesteads develop into a smaller number of larger farms, a sequence which the census records suggest may have taken place within relatively few years? Through what accident or design did pinto beans come to be the staple cash crop, here and on the Zuni Plateau in western New Mexico, while contemporary farmers in Roosevelt and Curry counties were dry-cropping grain sorghum (Wootton 1927)? Are there any meaningful comparisons to be made between the ultimately unsuccessful dry-farming of the 20th

century and Pueblo Indian subsistence in the 17th century, which also appears to have failed?

The majority of Estancia Valley homesteaders came from Texas, Oklahoma, Kansas and other Plains states. An architectural survey of Torrance County undertaken by the University of New Mexico, School of Architecture for the New Mexico Historic Preservation Bureau recorded structures built before 1945. The survey was directed by Edith Cherry, who reports (1981: personal communication) that the style of structures built throughout Torrance County is more similar to buildings found in the Plains, particularly Oklahoma, than to structural styles and materials used in the Rio Grande communities. What other aspects of "American" culture did these homesteaders bring with them to New Mexico? What aspects of Hispanic and Pueblo culture did they adopt? Archeological survey and limited excavation would be needed to supplement the records we have to document material culture and cultural practices of the Estancia Valley homestead communities.

2. The process of community disintegration has been studied along the Rio Grande and in the Manzano Mountains. The Spanish-American communities along the eastern flank of the Manzanos have seen one major study, that by Hurt (1941) at Manzano. As it happens, more historical documentation may be available for that community than other, similar ones. The Hurt thesis could provide the baseline for a sociological or socio-economic restudy of that community to determine the nature and pace of culture change, in a manner similar to the El Cerrito studies in San Miguel County. Community disintegration accelerated in the post World War I and World War II period throughout New Mexico. Along the Rio Abajo, some authors (Calkins 1937; Harper et al. 1943) have attributed the breakup of traditional villages to a number of processes including environmental change, the loss of traditional community functions to local and Federal government agencies, and to recasting of regional trade networks (Meinig 1971). How have these processes determined the life histories of Rio Abajo and Manzano Mountain communities? What policies and programs of local and Federal governments continue to erode the traditions of these communities? How can conservation and land-use planning policies be implemented with the least cost to traditional community values? What is the extent of the Federal land management responsibility for preservation of traditional

cultural environments?

3. Another general problem that has attracted almost no attention, but may be quite significant, is the interim between ranching and farming around 1900. This period witnessed lumbering in the Manzano and Gallinas mountains and mining in Socorro county, but concerning these there appears to be almost no published syntheses. Preliminary indications are that both the Manzano and Gallinas units of the present Cibola National Forest may have been extensively logged by the time that they were declared Forest Reserves in November 1906. Some or many of the sawmills were allegedly owned by one person, named McKinley. The socioeconomic impacts of lumbering and mining for the nearby communities, as well as the economics of the lumbering and mining and the long-term consequences for management, are topics that have seen little if any development in New Mexico. A viewpoint for investigation might be that of a major, short-term exploitation with long-term consequences. Archeological study of these industries is limited. Gilbert (1980) appears to have done the only professional archeological recording of the important Carthage Coal Field.

The foregoing list of problems for investigation, drafted in terms of general problems and more specific questions, is meant to be illustrative rather than exhaustive. It has also been the intent to suggest things which could more profitably be studied through a combination of archeological and historical research, than by either in isolation. Land managers and cultural resources manager are left with a tremendous responsibility to identify, evaluate and manage the important historic cultural resources of central New Mexico. This overview is just a beginning.

#### CONCLUDING REMARKS

The cultural resources of central New Mexico can be viewed in several ways. They can be seen as unique - in both the prehistoric and historic periods they represent the frontier of the more densely settled areas of the state. On the other hand, they can be seen as representative of common patterns of adaptation to the Southwest environment. The prehistoric period shows similarities to the general processes of puebloan cultural evolution, while, except for the 1680-1800 hiatus, the historic era reflects the more general settlement of the frontier. At the

same time, throughout the occupation of the region, there is a pattern of contrast between Mogollon and Anasazi, Pueblo and nomad, mountains and plains, Indian and Hispano and Anglo. The cultural resources of this region can thus inform us about many topics - frontier settlement, cultural interaction, and the broader processes

of New Mexico history. Whatever our perspective, one thing is certain: the cultural resources of central New Mexico are important. They merit our best efforts at management and protection, and they deserve more scholarly attention than they have recently received.

# APPENDIX A

## REGISTERED CULTURAL PROPERTIES IN THE OVERVIEW AREA

The following properties have been listed on the New Mexico State Register of Cultural Properties. In addition, those properties presented in bold type are listed on the National Register of Historic Places. The notation "(NHL)" means that the property is also a National Historic Landmark.

### TORRANCE COUNTY

### Kelly

#### Estancia

Little Mission Church of St. John the Baptist - Kelly

Berkshire Hotel - Estancia; 5th Street

### Magdalena

#### Moriarity

**Atchison, Topeka & Santa Fe Railway Depot** - Magdalena; North of US 60

**Eclipse Windmill**, Moriarity - Moriarity; 2 mi. West of Moriarty, off State Highway 222

**Clemens Ranch House** - Magdalena vicinity; Kelly Mining District

#### Mountainair

**Abo State Monument** (San Gregorio de Abo Mission) (NHL) - Scholle; 12 mi. West of Mountainair, North side of US 60

**Gallinas Springs Ruin** - Magdalena vicinity; 15 mi. Northwest of Magdalena in Cibola National Forest

**Gran Quivira National Monument** and Collections - Mountainair vicinity; 1 mi. East of Gran Quivira on NM 10

Ilfield, (Charles) Company Warehouse - Magdalena; North of US 60

Mountainair Railroad Station (AT&SF) - Mountainair; Railroad Avenue and tracks

Kelly Mine - Magdalena vicinity; 3 mi. Southeast of Magdalena off Highway 60

Pueblo Colorado - Mountainair vicinity; Forest Road 458, Cibola National Forest

Magdalena Bank Building - Magdalena; US 60

**Rancho Bonito** - Mountainair vicinity; Gran Quivira Road

Magdalena Historic District - Magdalena; along US 60

**Shaffer Hotel** - Mountainair; Broadway

**Magdalena Mercantile Building** - Magdalena; US 60

Tabira (Pueblo Blanco) - Claunche vicinity; Forest Road 533, Cibola National Forest

Magdalena Stock Driveway - Magdalena; see Catron County

#### Punta de Agua

### Mountainair

**Quarai State Monument** (La Purisima Concepcion de) (NHL) - Punta de Agua vicinity; 1 mi. South of Punta de Agua

**Gran Quivira National Monument** and Collections - Mountainair vicinity; 1 mi. East of Gran Quivira on NM 10

### San Antonio

### SOCORRO COUNTY

Hilton Bar at the Owl Bar - San Antonio; State Road 380

#### Bingham

**Trinity Site** (NHL) - Bingham vicinity; White Sands Missile Range

Mockingbird Gap Archeological Site - San Antonio vicinity; 10 mi. East of San Antonio



Montoya, (Eutimio) House - San Antonio; from the Owl Cafe, 1 block East, then a block and a half South

Sandal Cave - Nogal Canyon; South of San Antonio

#### Socorro

Abeyta & Montoya, (Antonio) House - Socorro: West side of Park Avenue between McCutcheon & Spring (SOCORRO MULTIPLE RESOURCE NOMINATION)

Abeyta Block - Socorro; 119 Manzanares (Masonic Lodge) 101 Plaza (Drugstore) 104 Plaza (Barber Shop) 105 Plaza (Baldwin Agency Insurer) (SOCORRO MULTIPLE RESOURCE NOMINATION)

212-214 Abeytia Avenue, East - Socorro; location same as site name (SOCORRO Avenue, E, 706 Manzanares Avenue, E Abeytia Avenue, East - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

Baca (A.B.) House - Socorro; 210 School of Mines (SOCORRO MULTIPLE RESOURCE NOMINATION)

Baca (Juan Jose) House - Socorro; Abeytia Street & Northeast corner of Socorro Plaza, just West of Highway 85 (SOCORRO MULTIPLE RESOURCE NOMINATION)

Bourguignon House - Socorro; 307 Mt. Carmel Road (SOCORRO MULTIPLE RESOURCE NOMINATION)

Brown House - Socorro; 205 Abeytia Avenue, Northeast (SOCORRO MULTIPLE RESOURCE NOMINATION)

Bursum House - Socorro; 326 Church Street (SOCORRO MULTIPLE RESOURCE NOMINATION)

300 California Street, South - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

400 California Street, South - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

407 California Street, North - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

Capitol, The - Socorro; 104 Plaza (SOCORRO MULTIPLE RESOURCE NOMINATION)

Captain Cooney House - Socorro; 309 McCutcheon Avenue (SOCORRO MULTIPLE RESOURCE NOMINATION)

Chambon House - Socorro; 324 Church Avenue (SOCORRO MULTIPLE RESOURCE NOMINATION)

Chihuahua Historic District - Socorro (SOCORRO MULTIPLE RESOURCE NOMINATION)

Church of the Epiphany - Socorro; 219 Fisher Avenue (SOCORRO MULTIPLE RESOURCE NOMINATION)

Church-McCutcheon Historic District - Socorro; Church & McCutcheon Streets (SOCORRO MULTIPLE RESOURCE NOMINATION)

Church of San Miguel - Socorro; Otero Street (SOCORRO MULTIPLE RESOURCE NOMINATION)

Cortesy House - Socorro; 327 McCutcheon Avenue (SOCORRO MULTIPLE RESOURCE NOMINATION)

Crabtree Building - Socorro vicinity; 211 Fisher Avenue (SOCORRO MULTIPLE RESOURCE NOMINATION)

Crown Mill - Socorro vicinity; East of the intersection of Highway 85 and the Magdalena Branch of the Santa Fe Railroad (SOCORRO MULTIPLE RESOURCE NOMINATION)

303 Eaton Avenue - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

East Abeytia Avenue Historic District - Socorro; East Abeytia Avenue (SOCORRO MULTIPLE RESOURCE NOMINATION)

Eaton House - Socorro; 403 Eaton Avenue (SOCORRO MULTIPLE RESOURCE NOMINATION)

Eaton/Darr House - Socorro; 313 McCutcheon Avenue (SOCORRO MULTIPLE RESOURCE NOMINATION)

El Torreon - Socorro; 305-317 Park Street (SOCORRO MULTIPLE RESOURCE NOMINATION)

217 Fisher Avenue - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

249 Fisher Avenue - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

Fitch Building - Socorro; 207 Fisher Avenue (SOCORRO MULTIPLE RESOURCE NOMINATION)

Fitch House - Socorro; 311 McCutcheon Avenue (SOCORRO MULTIPLE RESOURCE NOMINATION)

Fort Craig - Socorro vicinity; 37 mi. South of

Socorro on US 85

Fortune Property - Socorro; 110 Park corner of Park Street (SOCORRO MULTIPLE RESOURCE NOMINATION)

Garcia, (Juan Nepomuceno) House - Socorro; Northeast corner of old Plaza, on South side of Abeytia Street, long axis faces West (SOCORRO MULTIPLE RESOURCE NOMINATION)

Garcia, (Juan Nepomuceno) Opera House - Socorro; Terry Avenue & California Street (SOCORRO MULTIPLE RESOURCE NOMINATION)

304 Garfield Street - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

211 Grant Avenue - Socorro; location same as site name

Herrick House - Socorro; 505 Center Street (SOCORRO MULTIPLE RESOURCE NOMINATION)

Hilton House - Socorro; 601 Park Street (SOCORRO MULTIPLE RESOURCE NOMINATION)

Illinois Brewery - Socorro; Neal Avenue & 6th Street (SOCORRO MULTIPLE RESOURCE NOMINATION)

Kittrel Park-Manzanares Avenue - Socorro; Manzanares Avenue (SOCORRO MULTIPLE RESOURCE NOMINATION)

Knights of Pithias Hall - Socorro; 106-106 1/2 Manzanares Avenue (SOCORRO MULTIPLE RESOURCE NOMINATION)

Loewenstein/Torres House - Socorro; 403 Highway 85 (SOCORRO MULTIPLE RESOURCE NOMINATION)

101 Manzanares Avenue East - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

102 Manzanares Avenue East - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

110 Manzanares Avenue East - Socorro; location same as site name

315 McCutcheon Avenue - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

605 Nicholas Avenue - Socorro; location same as

site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

609 Nicholas Avenue - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

613 Nicholas Avenue - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

110 North Sixth Street - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

Park Hotel - Socorro; off Garfield Street between Garfield Street and Hisher Avenue, West of Kittrel Park (SOCORRO MULTIPLE RESOURCE NOMINATION)

301-303 Park Street - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

405 Park Street - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

Price/Loewenstein Mercantile - Socorro; 107 Manzanares Avenue (SOCORRO MULTIPLE RESOURCE NOMINATION)

San Miguel Church Historic District - Socorro; area around the church (SOCORRO MULTIPLE RESOURCE NOMINATION)

202 San Miguel Street - Socorro; location same as site name

202 San Miguel Street - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

Sedillo, (Anastacio) House - Socorro; 144 West Baca Street (SOCORRO MULTIPLE RESOURCE NOMINATION)

Sedillo, (Jacobo) House - Socorro; 144 West Baca Street (SOCORRO MULTIPLE RESOURCE NOMINATION)

201 Sixth Street - Socorro; location same as site name (SOCORRO MULTIPLE RESOURCE NOMINATION)

Socorro Multiple Resource District - Socorro; the incorporation limits of the City of Socorro

Socorro Plaza (Kittrell Plaza) - Socorro; center of the Plaza area

Stapleton Brothers Mercantile - Socorro; 109-111 Plaza (SOCORRO MULTIPLE RESOURCE NOMINATION)

Stapleton, (Edward S. Sr.) House - Socorro; 313 Mt. Carmel Road (SOCORRO MULTIPLE RESOURCE NOMINATION)

Stapleton (Vivian) House - Socorro; 312 Mt. Carmel Road (SOCORRO MULTIPLE RESOURCE NOMINATION)

Torres Block - Socorro; 101-107 Manzanares Avenue (SOCORRO MULTIPLE RESOURCE NOMINATION)

Torres, (A.A.) House - Socorro; 408 Highway 85, South (SOCORRO MULTIPLE RESOURCE NOMINATION)

Val Verde Hotel - Socorro; 203 Manzanares Avenue (SOCORRO MULTIPLE RESOURCE NOMINATION)

White Row - Socorro; 300-306 Center Street (SOCORRO MULTIPLE RESOURCE NOMINATION)

Zimmerly (Delfine) House - Socorro; 205 Mt. Carmel Road (SOCORRO MULTIPLE RESOURCE NOMINATION)

#### Winston

Ojo Caliente Military Post - Winston vicinity; approximately 12 miles North of Winston via State Highway 52.

## APPENDIX B: HISTORICAL PHOTOS

The additional Figures in this Appendix are reproduced from photographs in the collections of the Museum of New Mexico. They appear by permission and may not be further reproduced without the consent of the Museum of New Mexico.



Figure 9. Torreon at Manzano, about 1900. Photo (number 37438) courtesy of Museum of New Mexico.





Figure 10. Upper camp at Carthage, New Mexico as viewed from the west, circa 1884. Photo, by J.R. Riddle, (number 76081) courtesy of Museum of New Mexico.



Figure 11. Homestead life in the Estancia Valley. Photo courtesy of Museum of New Mexico.



Figure 12. Socorro, as viewed from the east circa 1884. Photo by J.R. Riddle in the Socorro County Historical Society collection (Museum of New Mexico photo number 68024).



Figure 13. The Fourth of July at Socorro, New Mexico circa 1883. Photo by G.M. Shaw (Museum of New Mexico number 14806). Courtesy of Museum of New Mexico.





Figure 14. View adjacent to Figure 13. Photo (number 14805) courtesy of Museum of New Mexico.



Figure 15. Motorcar used for passenger and mail service on New Mexico Central Railroad. Photo by George Law circa 1921 - 1926. Photo (number 43178) courtesy of Museum of New Mexico.

# BETWEEN SANTA FE AND TORRANCE

SOUTH BOUND trains have RIGHT of track over north bound trains of the same or inferior class

| Capacity of<br>Siding | SOUTH BOUND                             |                                       |                           |                    | TIME TABLE<br>No. 6<br>Tak'g Effect 12:01 A.M.<br>December 3, 1923 |                                             | NORTH BOUND                             |                                       |                                         |                                       | Water, Coal<br>Wye, etc | Altitude |
|-----------------------|-----------------------------------------|---------------------------------------|---------------------------|--------------------|--------------------------------------------------------------------|---------------------------------------------|-----------------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|-------------------------|----------|
|                       | Second Class                            | First Class                           | Distance<br>From Santa Fe | Station<br>Numbers |                                                                    |                                             | First Class                             | Second Class                          |                                         |                                       |                         |          |
|                       | No. 72                                  | No. 2                                 |                           |                    |                                                                    |                                             | No. 1                                   | No. 71                                |                                         |                                       |                         |          |
|                       | Mixed                                   | Passenger                             |                           |                    |                                                                    |                                             | Passenger                               | Mixed                                 |                                         |                                       |                         |          |
|                       | Lv. Tuesday<br>Thursday<br>and Saturday | Lv. Monday<br>Wednesday<br>and Friday |                           |                    |                                                                    |                                             | Ar. Tuesday<br>Thursday<br>and Saturday | Ar. Monday<br>Wednesday<br>and Friday |                                         |                                       |                         |          |
|                       | Lv. 9:35 AM                             | Lv. 10:45 AM                          | 0                         | 0                  | D                                                                  | SANTA FE                                    | Gu                                      | 115.7                                 | Ar. 1:35 PM                             | Ar. 3:45 PM                           | CWT                     | 7013     |
| 20                    | 9:37                                    | 10:50                                 | 1.1                       | 1                  |                                                                    | 1.1<br>STOCK YARDS                          |                                         | 114.6                                 | 1:27                                    | 3:37                                  |                         |          |
|                       | 9:41                                    | 10:52                                 | 1.6                       | 2                  |                                                                    | 0.5<br>CRANDALL STAT'N<br>U. S. IND. SCHOOL |                                         | 114.1                                 | f 1:25                                  | f 3:35                                |                         |          |
| 14                    | 9:50                                    | 11:00                                 | 5.5                       | 5                  |                                                                    | 3.9<br>DONACIANA                            |                                         | 110.2                                 | f 1:15                                  | f 3:25                                |                         | 6616     |
| 10                    | 10:20                                   | 11:25                                 | 16.0                      | 16                 |                                                                    | 10.5<br>VEGA BLANCA                         |                                         | 99.7                                  | f 12:45                                 | f 2:50                                |                         | 6355     |
| 75                    | 10:45                                   | 11:40                                 | 21.8                      | 22                 | D                                                                  | 5.8<br>KENNEDY                              | KY                                      | 93.9                                  | s   12:20                               | s   2:25                              |                         | 6008     |
| 21                    | 11:05                                   | 11:59                                 | 27.9                      | 28                 |                                                                    | 6.1<br>CLARK                                | CR                                      | 87.8                                  | f 12:01 PM                              | f 2:00                                |                         | 6073     |
| 30                    | 11:45                                   | 12:25 PM                              | 33.4                      | 33                 |                                                                    | 8.5<br>WILLIAMS SPUR                        |                                         | 82.3                                  | f 11:45                                 | f 1:35                                | W                       |          |
| 56                    | 12:10 PM<br>12:35                       | 12:45<br>1:05                         | 40.8                      | 41                 |                                                                    | 7.4<br>STANLEY                              | BA                                      | 74.0                                  | s   11:25                               | s   1:10<br>12:45                     |                         | 6317     |
| 6                     | 12:50                                   | 1:20                                  | 44.9                      | 46                 |                                                                    | 4.1<br>OTTO                                 |                                         | 70.8                                  | f 11:10                                 | f   12:30                             |                         | 6204     |
| 48                    | 1:15                                    | 1:40                                  | 52.4                      | 52                 |                                                                    | 7.5<br>MORIARTY                             | MY                                      | 63.3                                  | s   10:50                               | s   12:10 PM                          |                         | 6204     |
| 18                    | 1:40                                    | 2:00                                  | 60.6                      | 61                 |                                                                    | 8.2<br>McINTOSH                             | MC                                      | 55.1                                  | f 10:25                                 | f   11:35                             |                         | 6135     |
|                       | 1:50                                    | 2:10                                  | 64.1                      | 64                 |                                                                    | 3.8<br>ANTELOPE                             |                                         | 51.6                                  | f 10:15                                 | f 11:25                               |                         | 6121     |
| 221                   | 2:40                                    | 2:35                                  | 68.5                      | 68                 | D                                                                  | 4.4<br>ESTANCIA                             | AN                                      | 47.2                                  | s   10:05                               | s   11:10                             | 8<br>CWT                | 6083     |
| 40                    | 3:10                                    | 3:05                                  | 80.0                      | 80                 | D                                                                  | 11.5<br>WILLARD                             | WD                                      | 35.7                                  | s   9:25                                | s   9:45                              |                         | 6086     |
| 6                     | 3:45                                    | 3:35                                  | 91.7                      | 92                 |                                                                    | 11.7<br>PROGRESSO                           | PG                                      | 24.0                                  | f 8:50                                  | f   9:05                              |                         | 6167     |
|                       | 4:05                                    | 3:55                                  | 99.2                      | 99                 |                                                                    | 7.5<br>BIANCA                               |                                         | 16.5                                  | f 8:30                                  | f 8:45                                |                         | 6244     |
| 17                    | 4:30                                    | 4:10                                  | 104.7                     | 105                |                                                                    | 8.5<br>CEDARVALE                            | RO                                      | 11.0                                  | s   8:15                                | f   8:30                              |                         |          |
|                       | 4:40                                    | 4:20                                  | 108.6                     | 109                |                                                                    | 3.9<br>CAMALEON                             |                                         | 7.1                                   | f 8:05                                  | f 8:20                                |                         |          |
| 45                    | Ar. 5:10 PM                             | Ar. 4:45 PM                           | 115.7                     | 116                | D                                                                  | 7.1<br>TORRANCE                             | X                                       | 0                                     | Lv. 7:45 AM                             | Lv. 8:00 AM                           | CWY                     | 6430     |
|                       | Ar. Tuesday<br>Thursday<br>and Saturday | Ar. Monday<br>Wednesday<br>and Friday |                           |                    |                                                                    |                                             |                                         |                                       | Lv. Tuesday<br>Thursday<br>and Saturday | Lv. Monday<br>Wednesday<br>and Friday |                         |          |
|                       | 7:35                                    | 6:00                                  |                           |                    |                                                                    | 115.7                                       |                                         |                                       | 8:00                                    | 7:45                                  |                         |          |

Figure 16. New Mexico Central Railway Company time table number 6 for Monday, December 3, 1923. Photo by Arthur Taylor, courtesy of Museum of New Mexico (number 89570).



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Abbreviations have been used in this bibliography for names of several of the most commonly cited organizations which produce or hold reports or other kinds of studies within the overview area.

|                                                                                                      |                                                                             |
|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| ASU - Arizona State University                                                                       | NM/Mines - New Mexico State Bureau of Mines and Mineral Resources           |
| BLM - Bureau of Land Management                                                                      | NM/Plan - New Mexico State Planning Office                                  |
| GPO - U.S. Government Printing Office                                                                | NMSU - New Mexico State University                                          |
| HNAI - Handbook of North American Indians                                                            | NMSU/Station - New Mexico State University, Agricultural Experiment Station |
| HSR - Human Systems Research                                                                         | OCA - Office of Contract Archeology, University of New Mexico, Albuquerque  |
| LA - Laboratory of Anthropology, Museum of New Mexico, Santa Fe                                      | SANM - Spanish Archives of New Mexico (citation used in the text).          |
| MNM - Museum of New Mexico History Library                                                           | SAR - School of American Research, Santa Fe                                 |
| NPS - National Park Service                                                                          | SNM - Salinas National Monument                                             |
| NPS/PUB. - National Park Service Publications in Archeology                                          | UNM - University of New Mexico                                              |
| NMC/Station - New Mexico College of Agriculture and Mechanical Arts, Agricultural Experiment Station | USDA - U.S. Department of Agriculture                                       |
| NMHR - New Mexico Historical Review                                                                  | USFS - USDA Forest Service, Southwestern Region                             |
| NMM - New Mexico Magazine                                                                            |                                                                             |



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**Twitchell**
- | Number | Date | Reel | Frame | Description/Notes                                      |
|--------|------|------|-------|--------------------------------------------------------|
| 214    | 1819 | 22SG |       | Sevilleta Land Grant:<br>Surveyor General Case 95      |
| 218    | 1825 | 2    | 112   | Petition:<br>Antonio Chaves,<br>Arroyo de San          |
|        |      |      |       | Lorenzo.                                               |
| 382    | 1818 | 23SG |       | Town of Socorro<br>Surveyor General<br>Case 107        |
| 869    | 1767 | 5    | 137   | Belen vs. Sabinal:<br>encroachment on<br>pastures      |
| 1013   | 1829 | 5    | 1077  | Petition: Commu-<br>nity Land Grant<br>in Manzano      |
| 1217   | 1846 | 6    | 719   | Pedro Armendaris:<br>encroachment on his<br>land grant |

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| 890  | 1817 | 23SG  | Town of Socorro:<br>Surveyor General<br>Case 107                                     |
| 1104 | 1815 | 6 39  | Circular seeking<br>settlers to San<br>Pascual, Socorro,<br>and Pueblo of<br>Manzano |
| 1155 | 1800 | 6 379 | Plans to resettle<br>Alamillo and other<br>places below<br>Socorro                   |
| 1171 | 1800 | 6 503 | Settlement of<br>Socorro                                                             |
| 1194 | 1800 | 6 627 | Settlement of<br>Socorro,<br>Alamillo and<br>Sevilleta                               |
| 1199 | 1800 | 6 636 | Settlement of<br>Socorro,<br>Senecu, Sevilleta,<br>and Alamillo                      |
| 1266 | 1800 | 6 998 | Progress of set-<br>tlement at<br>Alamillo and<br>Sevilleta                          |

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| 3069 | 1821 | 20 982 | Pedro Armandaris:<br>detachment to<br>Valverde |
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| 21     | 15   | Town of Tajique                               |
| 22     | 15   | Town of Torreon                               |
| 23     | 15   | Town of Manzano                               |
| 26     | 16   | Jornada del Muerto                            |
| 29     | 12   | Casa Colorado                                 |
| 33     | 16   | Pedro Armendaris-Valverde                     |
| 34     | 16   | Pedro Armendaris-Fray<br>Cristobal            |
| 35     | 16   | Bosque del Apache                             |
| 51     | 18   | Nerio Antonio Montoya                         |
| 70     | 20   | Estancia                                      |
| 79     | 21   | Arroyo de San Loranzo                         |
| 95     | 22   | Nuestra Senora de los<br>Dolores de Sevilleta |
| 126    | 24   | Bartolome Baca                                |
| 154    | 28   | Antonio Sandoval                              |
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